

THE

VIBROPLEX

CO. INC.

In 1890 a typewriter sales and service business catering to the telegraph trade was begun in New York City.

In 1902 a new type of telegraph key was invented—one that was destined to revolutionize the transmission of Morse Code.

This is the story of the company that evolved from the collaboration of J. E. Albright, the entrepreneur, and Horace G. Martin, the inventor, a company whose name has come to be synonymous with the all-mechanical "speed key" or bug: Vibroplex Company, Inc.

The collector and historian will find this book useful for identifying and dating Vibroplex keys, as it has pictures and characteristics of all known models.



THE VIBROPLEX CO., INC.



HORACE G. MARTIN
"INVENTOR" OF THE VIBROPLEX

THE VIBROPLEX CO., INC.

1890 TO 1990



WILLIAM R. HOLLY

K1BH

THE VIBROPLEX CO., INC.

PORTLAND, MAINE

1990

ACKNOWLEDGEMENTS

The scope of the research required to complete even so small a work as this amazed me. I certainly couldn't have done it without the help of a great many people, a few of whom I'd like to thank here. Ms. Betty Wingo of the Gwinnette County (Georgia) Historical Society; Mrs. Brown of the Littauer Library, Harvard University; all the nameless folk at the Baker Library, Harvard University, and the Supreme Court Law Library, Concord, New Hampshire, who were so kind and helpful; Smiley White, collector; Fred A. Linn, collector; Attorney Sam Sargent; Dr. Gary Kish; Peter Garsoe, President of Vibroplex; Louise Ramsey Moreau, the foremost historian of the telegraph key today, who was generous to a fault with her own research material.

Finally I have to thank my wife Fran who says I owe her at least another hundred dinners out to make up for the ten hours straight she sat on the floor in the stacks of the Library of Congress leafing through dusty old magazines.

ILLUSTRATIONS

All photos were taken by the author, and all keys are from the author's collection unless otherwise noted in the captions. The frontispiece is from the Louise Ramsey Moreau Collection, and the photo of the 1990 Presentation model (opposite page 1) is from the Vibroplex Company.

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First Edition

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PREFACE

My first bug was an old Electro Bug given me by a retired railroad telegrapher when I was a junior radio operator almost 30 years ago. My father, a machinist, replaced a missing binding post and screw for me and I carried it around the world until I retired from the U.S. Coast Guard in 1979. Secretly, though, I'd always coveted that Cadillac™ of speed keys, the Vibroplex, preferably a Presentation model, thank you.

A few years after acquiring that first key I began to collect old radios and their accessories. It was then I decided it would be nice to display complete amateur receiving and transmitting stations representing various stages of electronic development. This, of course, meant I would need telegraph keys appropriate for the period of the radio equipment. I soon found there was plenty of information written about radios but only a limited amount on keys. Most of that, it turned out, was contained in a series of articles by Louise Moreau, whose acquaintance I soon cultivated. Over the years I've asked Lou for more and more information on keys, especially speed keys.

Finally I said, "Lou, why don't you write a book, so I can quit pestering you?"

Lou told me, "Your interest is in the bugs, but I much prefer the old landline keys of the 1800s and historical keys (keys related to an historical person or event). Why don't YOU write the book on speed keys?" So after five years of serious research, I have.

I chose to concentrate on Vibroplex in order to have a clear focus to the story, and Vibroplex is and always has been the premier name in the industry. The fact that Vibroplex had relocated from New York City to Portland, Maine, almost in my back yard, certainly had a bearing on my decision.

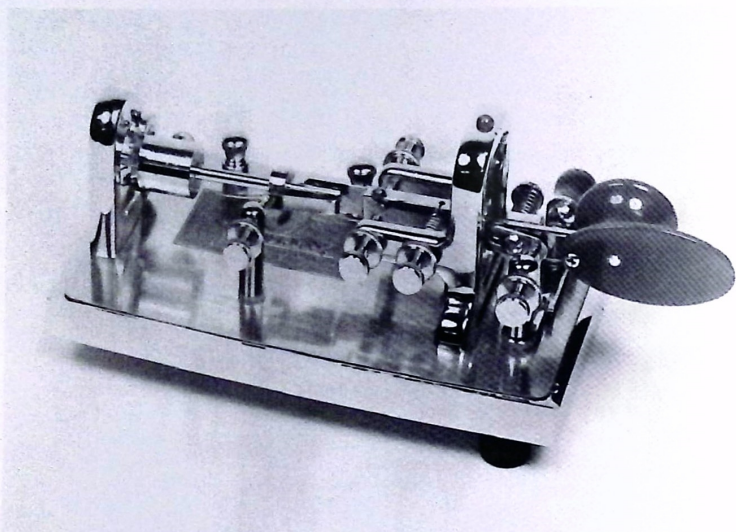
In researching the story I had to rely on public and court records, contemporary magazines and newspapers, and the meager records that remain in the company files. Just before Peter Garsoe, the current president of Vibroplex, bought the company, the employees cleaned up the place. Six truckloads of records went to the dump!

I believe I've been able to assemble a true picture of the company and assign accurate dates to the various models of keys. In laying out the legal issues and other events, I have tried to let the facts speak for themselves. It was necessary in some instances to condense or paraphrase long legal passages or company agreements to make the story coherent. Occasionally I added my own subjective interpretations of the facts, also in aid of making the story more understandable.

Bill Holly, K1BH
Kittery Point, Maine
December 6, 1989



*This work is dedicated to the women in my life:
Fran, Robin, Kate, Amanda, Hillary, and Sheri*



THE VIBROPLEX ORIGINAL—PRESENTATION MODEL, 1990

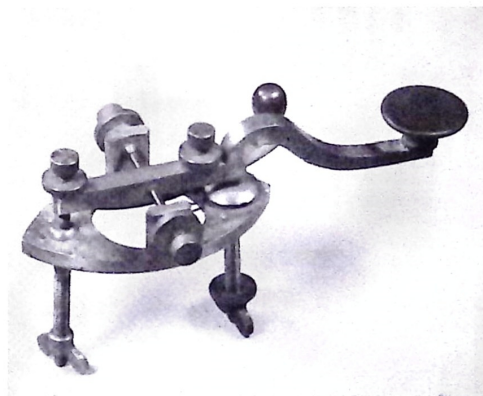
WHY A NEW KEY?

"Increase productivity and reduce costs." That has been the catch phrase of business since the start of the Industrial Revolution. The telegraph industry at the beginning of the 20th century was no exception to the rule. The country was wired from coast to coast. Tens of thousands of miles of wire carried millions of messages daily. Multiplex equipment allowed several messages to be transmitted on a single wire simultaneously. Relays were as sensitive as engineering and craftsmanship could make them. The one thing that hadn't changed in the fifty-odd years since Samuel F. B. Morse had introduced the electric telegraph to the United States was the method of generating the Morse code characters. The telegrapher still had to make each dot and dash of the code by individual downward strokes on a spring loaded telegraph key. (Fig. 1)

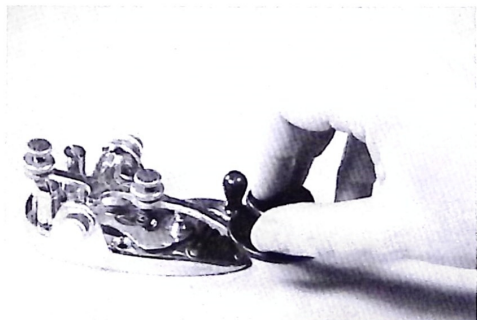
Not only was the operator's productivity not increasing, the most experienced, fastest operators were the very ones most likely to succumb to the dreaded telegraphers' cramp or paralysis, frequently a crippling disorder.

Dr. Gary Kish, an orthopedic surgeon in Portsmouth, New Hampshire, read some contemporary accounts of this malady and then observed a demonstration of Morse code being sent on a conventional key. Dr. Kish stated that telegraphers' paralysis was another name for what we know today as carpal tunnel syndrome.

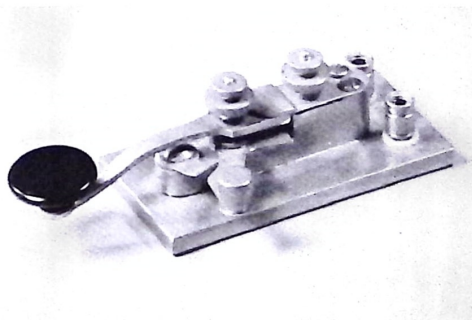
It was obvious as early as the 1860s that some change in the method of transmitting the code was needed, but nothing had materialized by 1900.



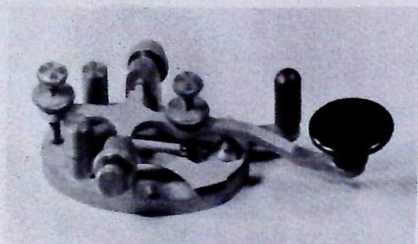
2. G. M. Phelps Camelback Key, ca. 1860.



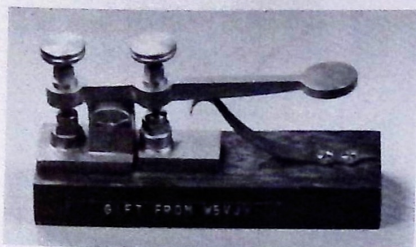
1. An operator manipulating a McElroy Stream Key.



3. Steiner Key, ca. 1870.



4. Bunnell Triumph Key, ca. 1880.



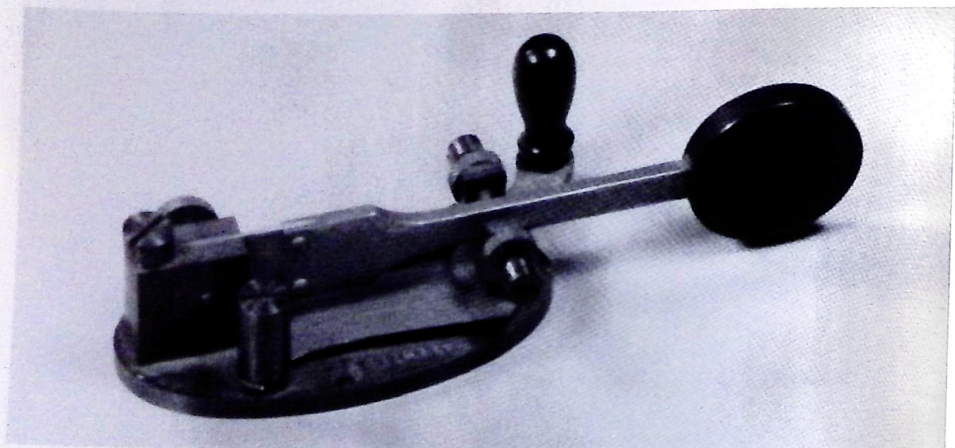
5. Replica of the Vail Lever Correspondent, ca. 1844.
Louise Ramsey Moreau Collection.

The telegraph key had changed greatly in style over the years (Figs. 2, 3, 4), but the mechanics were precisely the same as when Alfred Vail invented his "lever correspondent" in 1844 (Fig. 5).

To be sure, there had been attempts to improve the key. There was a typewriter-style machine that generated Morse code characters when the appropriate key was struck. There were convertible keys which could be used conventionally or flipped 90 degrees and used with a side-to-side motion rather than up and down. Neither appears to have been a great success.

Around 1888 J. H. Bunnell & Co. brought out the Double Speed Key. This key (Fig. 6) operated from side to side and could make a dot or dash when moved either right or left. It may have been somewhat easier on the wrist than a conventional key; however, it still required a separate motion for each dot or dash and was exceptionally difficult to master.

The Double Speed Key did enjoy some small popularity. Even today one may encounter an old timer using a "sideswiper" on the amateur radio bands. The Bunnell key did not become the overnight cure of telegraphers' paralysis, but its side-to-side motion did provide one element for the key of the future.



6. Bunnell Double Speed Key, ca. 1888.

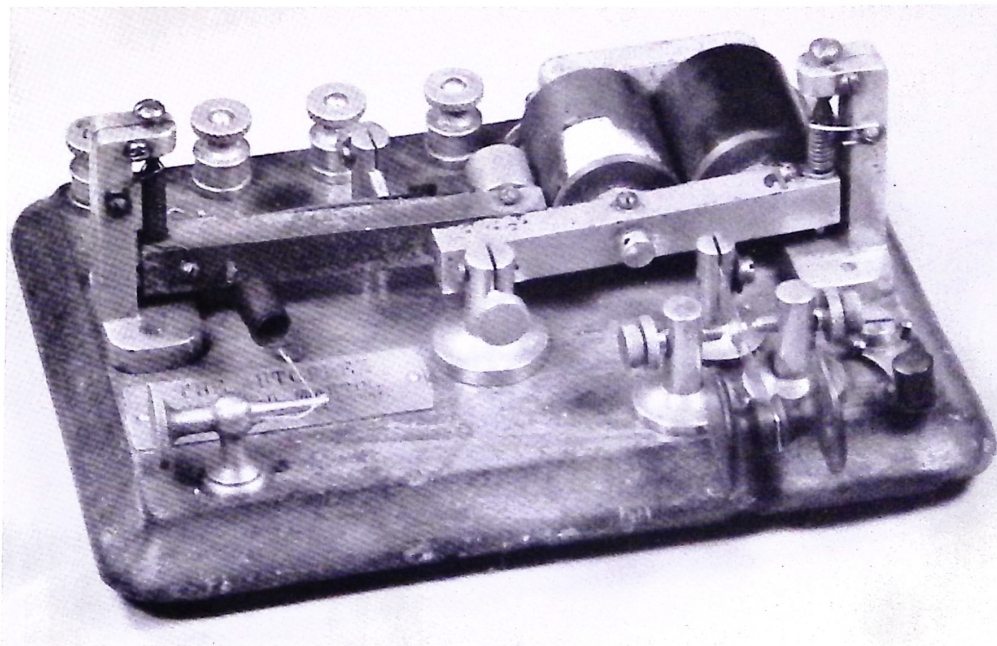
2

ENTER HORACE G. MARTIN

On October 6, 1902, Horace G. Martin filed a patent application (Pat. No. 732,648; see appendix) for a telegraphic transmitter, the purpose of which is described in his patent application as follows: "My invention relates to telegraphic transmitters, and has for its object, broadly, to provide an instrument of this character which shall retain all the merits of the Morse key, but shall be so constructed that it will make all dots automatically, leaving it in the power of the operator to adjust the length of the dots and leaving the spaces and dashes wholly at the control of the operator—that is to say, the operator may lengthen or shorten the dots, the spaces and dashes remaining at his control, or lengthen the spaces and dashes at will, the dots remaining constant. My invention, in other words, provides a simple effective method of sending that wholly avoids the intense nervous strain of the Morse key and still retains its merits."

That is one of the shortest paragraphs in the five pages of single-spaced fine print Martin uses to describe the Autoplex telegraphic transmitter (Fig. 7).

The Autoplex was an electro-mechanical device and required batteries to operate. It cut the amount of effort in sending the code by over 50%, and a sturdier, more compact all-metal model (Fig. 8) was soon

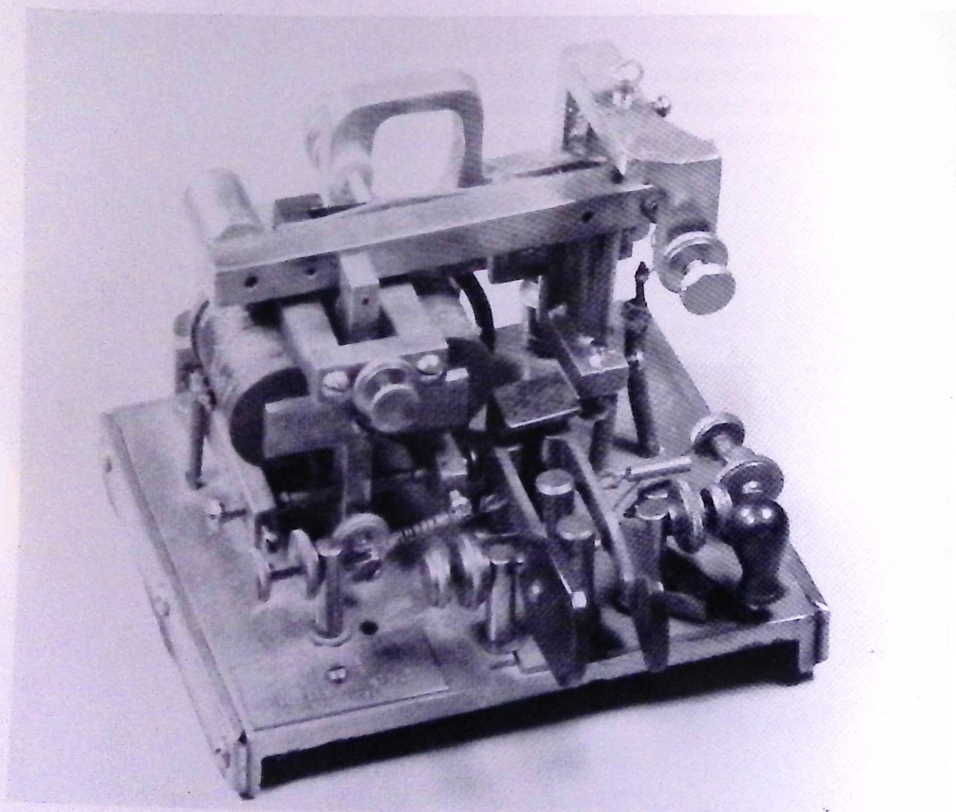


7. First production model Autoplex, ca. 1902. The Vibroplex Company Collection.

introduced. However, this key was still bulky, had many adjustment variables, and also required heavy expensive batteries.

Martin obviously realized the Autoplex was not the final solution because he continued his search for the perfect key. While he searched, it appears he was also looking for a better way to market his new product. Louise Moreau, the noted key historian and collector, met some of Martin's contemporaries. P. J. "Jack" Falkner told Lou that he was a telegrapher and Martin's neighbor in Brooklyn, N.Y., and Martin had a shop in the back of his home where he built each key as it was ordered. Elmo Pickerill told Lou he saw Martin using one of the new keys on a circuit in a Western Union office. Pickerill decided he would like one and gave Martin five dollars. A week later Martin appeared with the key.

This cottage industry approach to marketing was probably the only way Martin could have introduced such a radically different machine to a tradition-bound group like the telegraphers. However, once the machine had been proven on the circuits and the demand began to increase, a new strategy was required.



8. Second production model Autoplex, ca. 1903-1905. Double lever keying mechanism probably not original.

3

NEW PARTNERS

On February 19, 1904, Horace G. Martin, Edward F. Buchanan, A. O. Brown, Lewis G. Young, Frank L. Schoonmaker, Walter P. Phillips, and Cornelius O'Connor filed for a certificate of incorporation in the state of New York for the United Electrical Manufacturing Company. Buchanan, according to contemporary accounts, could have been a model for a Horatio Alger book.

He was an orphan adopted by parents of modest means in the small town of Norcross, Georgia. As a lad he took to hanging around the local train station and telegraph office, where he became proficient as a Morse telegrapher. At the age of 13 he left town to make his way in the world. He eventually wound up in New York City as a telegrapher with a Wall Street stock brokerage. He studied the stock business and worked his way up in the firm from an \$18 a week telegrapher to a \$100 a week salesman. He soon left to become a junior partner in the newly-established firm of A. O. Brown.

Shortly after the turn of the century, he returned to his home town in a private Pullman, having made a million dollars in the stock market. He built a mansion for his foster parents. He had a water works and electrical power plant built and donated them to the town so the mansion would have modern utilities. He then built a plow factory and another factory for the manufacture of automobiles and electrical appliances of all sorts. This latter plant was called the United Electrical Manufacturing Company.

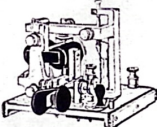
There is no record of their association other than the articles of incorporation, but it is apparent that Martin and Buchanan met in New York, and Buchanan offered to back Martin in the manufacture of telegraphic apparatus. In May 1904, *The Commercial Telegraphers' Journal* carried a full page ad (Fig. 9) for the Martin Autoplex, made by United Electrical Manufacturing Company, 25 Broad Street, New York, and that ad was continued every month for the rest of the year.

Would You Like to be a Fast and Perfect Sender?

BUY

THE MARTIN AUTOPLEX

The only really practicable Sending Machine ever invented. You can learn to operate it in two weeks. No keyboard or complicated finger movement to master.



THE AUTOPLEX is simply an improvement on the old fashioned key, in that it makes dots automatically

THE button on the Martin Key is similar to that on the old style instrument, but is operated differently—a horizontal instead of vertical motion being used. When the button is pressed lightly to the right, the machine makes automatic dots in any required number; the dashes are made by pressing the button to the left. To illustrate: The letter F is made by holding the key against the right contact until the machine makes five dots—one motion of the hand; the figure 4 is made in two motions, one to the right for the four dots and one to the left for the dash. The instrument can be adjusted to any desired speed to suit wire conditions, and the sending will "carry" across the continent.

The Autoplex makes it possible for any operator, regardless of his experience, to send faster and better than the best experts now employed by the Press Associations.

Telegraphers who have lost their grip after a couple of weeks' practice, can send prettier and speedier Morse than they could in their palmiest days.

By learning the Autoplex you can place yourself in a class with the finest senders in the country, and thus increase your earning capacity, as the demand for expert senders in the brokerage and leased wire business is constantly growing.

No telegrapher, railroad or commercial, who wishes to keep abreast of the times can afford to be without this key, as it will displace the old style key in commercial and press work as surely as the typewriter has displaced the pen.

Advanced telegraphers are now taking up the Autoplex, and it is only a question of time when all will follow. You will realize this fact after once hearing the Autoplex used.

Only a few of the keys have been made thus far, but without exception, every man fortunate enough to have accurate one will attest to its worth.

Write us for circular more fully describing the instrument.

NOTE—Our attorneys have been instructed to bring suit against the makers of an inferior machine called the Celtic Telegraph for infringement of our patent rights, and we expect to soon stop the manufacture, sale or use of that instrument.

UNITED ELECTRICAL MANUFACTURING CO.
25 BROAD STREET, NEW YORK

9. First known ad for a Martin key.
The Commercial Telegrapher's Journal, May 1904.

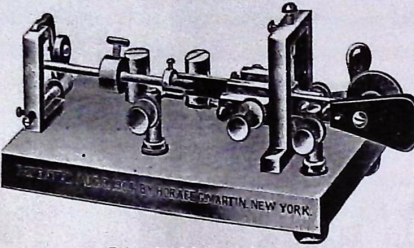
On May 7, 1904, a month after incorporating U.E.M., Martin filed his second patent (Pat. No. 767,303; see appendix) which showed new methods of obtaining automatic dots using a weighted vibrating arm with or without the assistance of a magnetic coil. This patent was the foundation for a new all-mechanical

telegraph transmitter called the Vibroplex. Patent 842,154 (see appendix), filed April 16, 1906 and granted January 22, 1907, is a more detailed version of the ideas first shown in the 1904 patent.

Figure 10 is an ad from the June 1905 *Commercial Telegraphers' Journal* in which O.T. Anderson of Chicago advertised the Vibroplex by Horace G. Martin for \$12. In the October 1905 issue of the same journal, U.E.M. advertised the Vibroplex from their 53 Vesey Street, New York, office. The key shown in the ads is the same as the key shown in Figure 11.

From May 1904 into 1905, U.E.M. heavily advertised the Autoplex. Beginning in June 1905 until June 1907, the Vibroplex was promoted in three of the major telegraph journals of the day. It seems highly unlikely that once this advertising blitz was on, Martin continued to make the transmitters one at a time in his home shop.

THE VIBROPLEX.



(Price \$12.00 f. o. b. factory.)

Write for catalogue of typewriter and telegraph appliances.

O. T. ANDERSON,

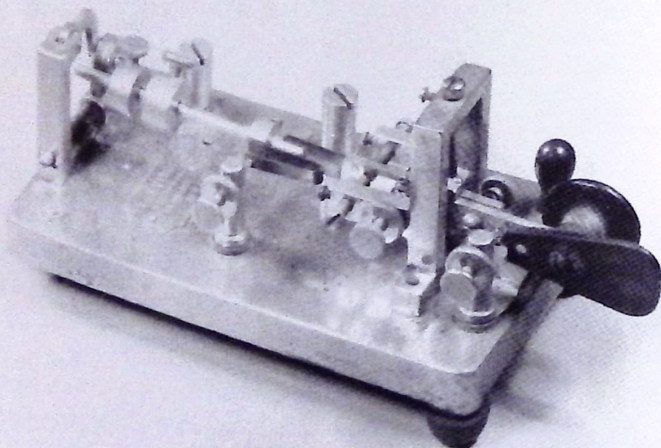
Member O. R. T. - C. T. U. A.

The Vibroplex is reliable, efficient, simple and portable, no battery required. The sending is firm, no rattle, it does not get out of order. It is now in use on the longest and heaviest circuits in the country and giving perfect satisfaction. It is adjustable to all wire conditions. Its use approved by telegraph officials everywhere.

MARTIN AUTOPLEX still for sale at \$25.00; five dollars with order, balance \$5.00 per month.

608 POSTAL TELEGRAPH BLDG., CHICAGO.

10. First known ad for a Vibroplex. The Commercial Telegrapher's Journal, June 1905.



11. The first model Vibroplex key, ca. 1904-1907.

VIBROPLEX GOES TO COURT AND TO GEORGIA

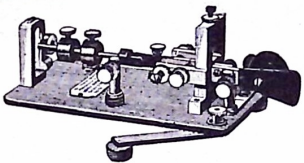
Martin was not the only person working on semi-automatic keys. On January 11, 1904, William O. Coffe filed for a patent on a telegraph key which made the dashes manually and the dots automatically through the use of a mechanical vibrator. The object was to produce a key that did away with the electromagnetic complexity of the Martin Autoplex.

The Extension Arm Vibroplex

EASILY ADJUSTED—EASILY LEARNED—EASILY MANIPULATED

Attention is called to our new light base VIBROPLEX with extension arm, which closes under the base when not in use. This device gives the instrument a firmer footing on the desk, and removes the objectionable weight that was necessary in the former base.

**MARTIN'S FAMOUS
VIBROPLEX**



**THE PERFECT
TRANSMITTER**

The Vibroplex holds all Speed Records as well as all Long Distance Records

SEND FOR DESCRIPTIVE CIRCULARS

United Electrical Manufacturing Co.

Norcross, Georgia

P. S.—Note our new address, where we have established an extensive factory for the manufacture of Mechanical and Electrical Apparatus

12. Ad. Commercial Telegraphers' Journal, July 1907.

Coffe's patent application was filed four months earlier than Martin's May 7, 1904, filing for a patent on an all-mechanical key. While Martin's patent (767,303, see appendix) was granted only three months later on August 9, 1904, Coffe's application took over two years to be processed. Records indicate that Coffe made a number of claims that resulted in a long controversy with the Patent Office on matters of detail. On February 13, 1906, Coffe was finally granted patent 812,183 (see appendix).

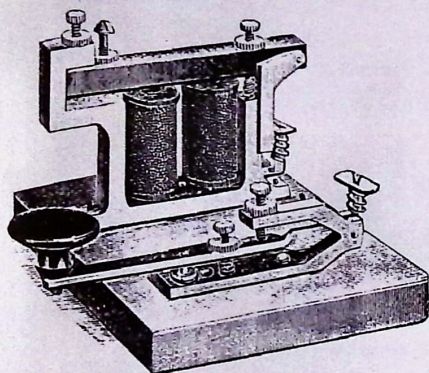
During this period, probably sometime in 1904, Coffe teamed up with Benjamin F. Bellows to produce a key based on his patent under the Mecograph label. The Mecograph Company of Cleveland, Ohio, advertised for the first time in the January 1905 issue of *The Commercial Telegraphers' Journal*.

In early 1907 Benjamin F. Bellows as assignee of the Coffe patent and doing business as the Mecograph

Company filed suit for infringement of his patent by United Electrical Manufacturing Company and Horace G. Martin.

On May 23, 1907, the Circuit Court, Southern District New York, found in favor of Martin and U.E.M. and dismissed the case. The court felt that the Martin key and patent 767,303 were sufficiently different as not to infringe on Mecograph. The court further said that if Coffe's patent was so broadly construed as to cover Martin's Vibroplex key, then Martin's patent 767,303 for the Autoplex anticipated Coffe's invention and therefore rendered the Coffe patent invalid.

Bellows appealed the verdict, and on March 10, 1908, the Second Circuit Court of Appeals reversed the decision and ruled that U.E.M. and Martin were indeed infringing claim #11 of Coffe's patent. This claim dealt with the vibrating arm which produced the dots in both keys and hence was the very essence of these keys.



13. Picture of a GEM practice instrument. From an ad in *The Commercial Telegraphers' Journal*, July 1906.

Both plaintiff and defendant had stipulated that the filing date of their patents was the date of invention. Since Coffe's filing date of January 11, 1904, preceded Martin's May 7, 1904, filing by nearly four months, Coffe's patent prevailed. Martin claimed that his 1903 Autoplex patent anticipated Coffe. The Appeals Court, however, pointed out that Martin's Autoplex patent as well as all his working sketches of that period required the use of some sort of motor as an element—electromagnetic, clockwork or small caloric engine. The court ruled, "in our opinion the device of the patent in suit [Coffe's patent] is a meritorious invention . . ."

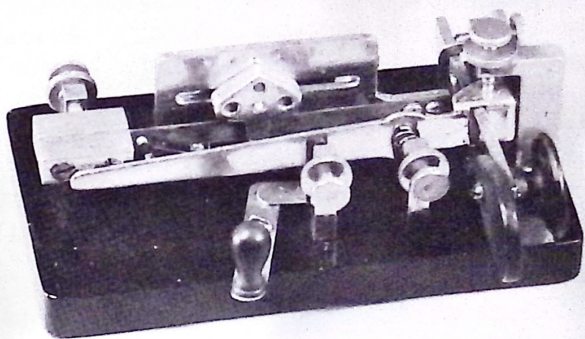
Coffe and Bellows had won. Or had they? Coffe was acknowledged as the inventor of the all-mechanical semi-automatic telegraph key, but it was to be a hollow victory.

Normally the winner of such a suit could expect to get an injunction to stop the infringer from making any more infringing products and to receive damages for past injuries. In this case it didn't happen. When Bellows filed suit he claimed infringement of twelve claims. The court felt that most of these claims were "wholly superfluous" and found "infringement of claim 11 is proved, but since the appellant has failed as to the other claims there can be no costs of this appeal." This meant that although Coffe was acknowledged as inventor, Coffe and Bellows could neither collect damages nor stop Martin from manufacturing his keys. It was a Mexican standoff!

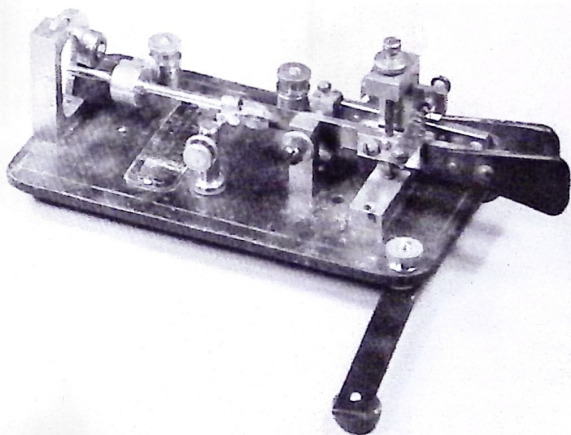
While all the litigation was going on, U.E.M. was on the move in another direction, namely south. Figure 12 is an ad that appeared in the July 1907 *Commercial Telegraphers' Journal* which indicates that U.E.M. had moved its operation to Norcross, Georgia. It also showed a new model Vibroplex which was actually a regular Vibroplex mounted on a thin base. It used an articulated leg to add stability without the weight of the older model. It's believed the old model on the heavy base was also being made.

From the Moreau library comes a taped interview with Noye H. Nesbit by George T. Reed that gives us some insight into the Norcross operation. Nesbit, a lifelong resident of Norcross, was a boy of 12 when the Martin family moved to town, and he recalled going to school with Horace G. Martin Jr.: "I knew his son [Horace G. Martin, Jr.] well and I used to watch them make those Vibroplexes." When asked about the actual manufacturing process, Nesbit's reply was most illuminating. "Well, there was lots of little brass parts on it. Let me put it this way: they [the parts] were not made here in Norcross . . . they were only assembled here. Martin either got the parts from New York or Atlanta maybe, as they did not have any foundry down here, nor any machine shop. This was just an assembly plant. Now they did have those little machines that rolled the coils. The Vibroplex parts came here in little boxes and the wire for the coils came in rolls."

Apparently the Norcross plant was not a full-fledged production facility. As to the coils, there are a couple of possibilities. A July 1906 ad in the *Commerical Telegraphers' Journal* showed a picture of a Gem practice instrument produced by U.E.M. (Fig. 13). This was a simple straight key and sounder mounted on a board, today called a "key on board" or KOB. The coil winding machinery could have been intended for these KOB sets, the Autoplex, or for some other product for which no record has been found. It's doubtful, however, that the Autoplex was still in production in 1907. Ads for the Autoplex had disappeared by the end of 1905, and the all-mechanical Vibroplex and arch rival Mecograph (Fig. 14) were being heavily promoted. It seems the economy and simplicity of the mechanical keys completely



14. Mecograph No. 3, early model, ca. 1907.



15. Double lever Vibroplex built on a thin base at U. E. M., Norcross, Georgia, ca. 1907-1908.

overwhelmed the Autoplex in a short period of time. The coil machinery was most likely for the manufacture of the Gem set or some unknown project.

U.E.M. produced at least two other products at Norcross. Figure 15 shows a double lever key with the Norcross label, thin base and articulated leg. This is Martin's first production double lever key, and it poses somewhat of a mystery. Martin never filed a patent on the double lever key. Perhaps he decided that taking out patents was a futile effort after the Bellows-U.E.M. debacle. Whatever his reasons, several years later his new associates felt the need to purchase two patents (No. 1,074,831 and 1,110,373; see appendix) granted to Royal Boulter in 1913 and 1914 to protect a design Martin had been producing since at least 1908!

The other Norcross product was a little more ambitious and probably had little or nothing to do with Martin. Figure 16 shows an ad for the "Nor-X" gasoline automobile. The "Nor-X" was not an overnight success. Noye Nesbit reports, "I don't think they ever assembled more than three of the Nors because they were away ahead of their day."

Whether the Nor-X was ahead of its time we don't know, but time was running out for U.E.M. Most of the company backers were associated with the brokerage firm of A. O. Brown & Company. In August 1908 A. O. Brown suffered a spectacular \$3,000,000 failure due to poor investment practices. It was the largest failure seen on Wall Street at the time, and drew worldwide attention. Fraud was alleged, and several members of the firm, including Buchanan, were jailed for a few days while authorities investigated.

The last ad for the United Electrical Manufacturing Company, Norcross, Georgia, appeared in the August 1908 issue of the *Commercial Telegraphers' Journal*.

Edward F. "Buck" Buchanan collapsed on Broad Street in Atlanta on Friday, December 2, 1910, and died the following day at the age of 38. His wife was left a pauper.

FOUR AND FIVE PASSENGER CAR \$950.00
TWO PASSENGER RUNABOUT \$800.00
DELIVERY CARS FROM \$500 TO \$1500.00

PERFECT CONTROL	EFFICIENCY
MINIMUM UP-KEEP	RELIABILITY
FIRST CLASS IN EVERY DETAIL	MANUFACTURED BY

UNITED ELECTRICAL MFG.CO.
NORCROSS, GA.

NOR-X
GASOLINE
AUTOMOBILES

16. Ad of unknown origin for a Nor-X automobile, ca. 1907-1908. Betty Wingo Collection.

NEW PARTNER, NEW KEY, NEW HORIZONS

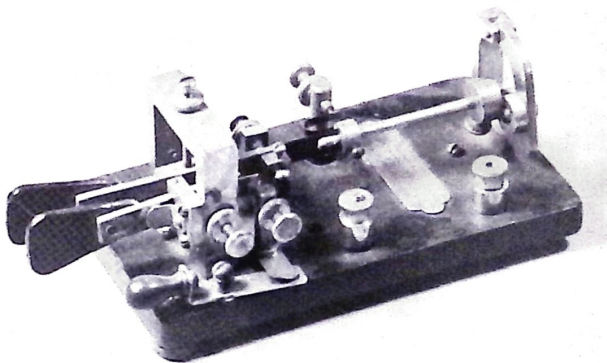
Martin's whereabouts and activities from August 1908 through 1910 remain unknown. In 1911, however, is the first indication that he was back in New York. The February 1911 *The Railroad Telegrapher* carried an ad for J. E. Albright, 253 Broadway, New York, touting "ALL MAKES SENDING MACHINES INCLUDING THE FAMOUS MARTIN VIBROPLEX." The accompanying picture showed a Martin double lever design like Figure 17. *The Railroad Telegrapher*, June 1911, has another J.E. Albright ad (Fig. 18) introducing a new "Horace G. Martin Single Lever Direct Point Sending Machine" (Fig. 19). An application for patent (No. 1,043,449; see appendix) for the new design was filed October 27, 1911, and granted November 5, 1912. The patent lists Martin's address as Brooklyn, N.Y.

The Direct Point's main feature was that it used only one contact for both dots and dashes. This machine was referred to as the 1912 model in the ad, which also proclaimed Albright was "SOLE SELLING AGENT." By the end of 1912, this machine had been renamed the "Model X."

Patent Number 1,042,457 (see appendix), filed on July 1, 1911, seems to have some elements in common with the Direct Point machine, but it is not a single contact key. No evidence exists to show that a machine based on this patent was ever put into production.

Documenting the exact nature of the agreements between Martin and Albright is difficult if not impossible, but some logical guesses can be made based on Martin's pattern of activity. Martin initially sold his keys to friends and co-workers. He never tried to advertise his product on his own. At first opportunity he joined with a large group to produce and promote his keys. When U.E.M. established an assembly facility in Georgia, Martin uprooted his family and went with the production end of the business instead of staying in the big city where the market and marketing were. After the U.E.M. collapse, he made his way back to New York to try again, but staying in the pattern, he didn't attempt his own marketing but found a new partner to be both financial angel and head sales manager. It would appear that Martin much preferred to design and build keys rather than sell them.

For once Martin chose wisely. J. E. Albright had established a typewriter sales and service business in



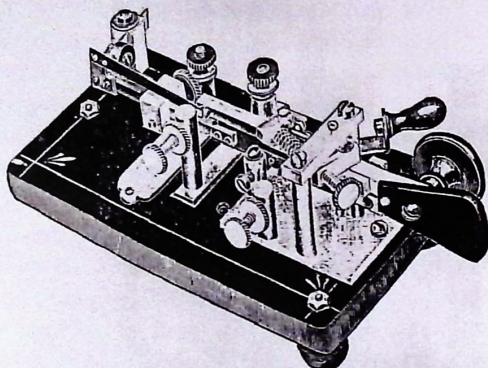
17. Double lever Vibroplex, ca. 1911-1914.

AN AMERICAN TRIUMPH

Whenever an American victory is proclaimed, whether in the field of sport or industry, every American heart is filled with pride. Hence the conquest of all countries and nations by the famous

Horace G. Martin Single Lever Direct Point Sending Machine

should be regarded in the light of a National achievement and supported as such. Throughout the entire world, wherever the name of the most perfect Sending Machine is asked, the answer is invariably—



THE MARTIN VIBROPLEX

The 1912 Model of the famous Horace G. Martin Vibroplex is the most masterfully constructed and exquisitely finished Sending Machine of modern times. The new Single Lever, known as the Direct Point, solves the problem, for it makes dots and dashes on the same contact, thereby duplicating the work of the best hand-sender in the world. It is allowed on all circuits where the old style is ordered taken off. Buy while the price is \$10.00, as it is liable to go to \$12.00, owing to the fact that the workmanship and material in this machine are the best that brains and unlimited capital can produce. The Martin trade-mark and 15 years' experience is your guarantee. 50% better than the old style single lever Martin.

There are certain concerns which are unscrupulously leading operators to believe they are selling the genuine Horace G. Martin Vibroplex, while in reality they sell an imitation known as the "Improved Vibroplex." They dare not use the Martin name or trade-mark. We will appreciate the co-operation of telegraphers who are interested in preventing imposition upon Vibroplex users, in keeping us informed concerning the attempts of these concerns to sell an imitation of the Martin Vibroplex. Damages will be claimed for any and all infringements of our patent rights.

The price of the Martin Vibroplex with black lacquered base is \$10.00, with nickel-plated base \$12.00. Handsome polished dark oak carrying case \$1.25 extra.

REMIT BY MONEY ORDER OR CHECK TO

J. E. ALBRIGHT, - - 253 Broadway, New York

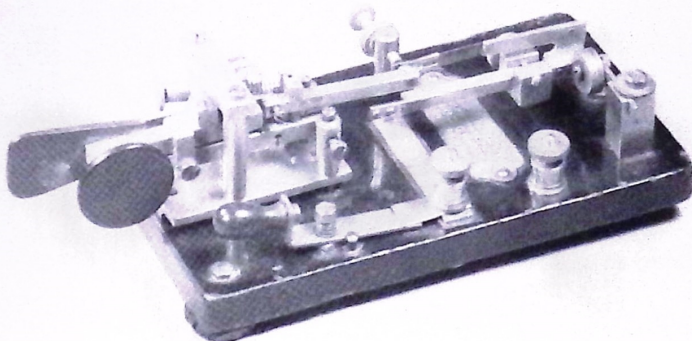
18. Ad for the Direct Point. *The Railroad Telegrapher*, June 1911.

Albright had no intention of sitting in his store selling a few sending machines as the customers wandered in. He meant to corner the market. In November 1913 the following ad appeared in *The Railroad Telegrapher*: "An Announcement to Our Friends. The Mecograph Co., formerly of Cleveland, has moved to the Martin factory in N.Y. and hereafter all orders for instruments or for repair parts will be filled by:

J.E. Albright, Sole Agent
253 Broadway, New York City.

New York in 1890. At some point he had been a railroad telegrapher. Vibroplex ads (Fig. 20) in the early teens frequently declared his membership in the Order of Railroad Telegraphers (O.R.T.) and displayed his certificate number. Since it was the custom of the time for telegraphers to furnish their own typewriters, it seems safe to assume that if Albright wasn't catering to the telegraphers exclusively, he could count on them for a significant portion of his sales. Under those circumstances it would be a natural extension of the business to take on a line of telegraph transmitters.

In fact, Vibroplex may not have been Albright's only fling into the telegraph key market. A March 1911 ad in the *Postal Telegraph* (Fig. 21) proclaimed: "Typewriters. Sending Machines. Any Make. Any Style. . . ." This same ad featured a Dunduplex transmitter. This was only a month after Albright's first ad for Vibroplex in *The Railroad Telegrapher*, which also featured "All Makes Sending Machines." The Dunduplex connection must have been fleeting. All the Albright ads after March, 1911, promoted the Vibroplex by Horace G. Martin exclusively.



19. Model X Vibroplex, ca. 1911-1914.

Sending machines were originated by H.G. Martin and all instruments manufactured by him will be greatly improved. No operator can afford to be without one of these machines."

On October 30, 1913, Albright bought patent number 812,183 (see appendix) for \$9,000 from Nellie E. Bellows, widow of Benjamin F. Bellows. Now all the key patents in the telegraph sending machine trade were under the control of one person. This Halloween Eve coup was about to haunt the patent infringers from coast to coast.

**The Vibroplex
Can Be Used by
Any Telegraph
Operator**

Top-salaried operators send with the Martin Vibroplex. You can greatly increase your own earning capacity through no other aid than that of the Vibroplex. If you do not believe that the Vibroplex is the undisputed leader, ask any of the thousands of Vibroplex users. Ask the man on the heavy lease circuit, the man on the press circuit, the bonus man, the men WHO GET THE MONEY — ask them about the Vibroplex. Practically every one of them uses the Vibroplex. There is no use in wasting time or money on some unproven experiment or some proven failure.

**Japanned Base,
\$10.00
Nickel Plated Base,
\$12.00**

**Genuine Old-Style Single-Lever
Horace G. Martin Vibroplex**

Patents covering our instruments have been sustained by the United States Circuit Court of Appeals for the second circuit (New York and by the United States District Court for the Northern District of Ohio), Cleveland. A suit is pending in the United States Court against another infringer, and will be tried shortly, and we will vigorously prosecute in the United States District Court any other parties infringing our patents.

J. E. ALBRIGHT, Member O. R. T., N. Y., Div. 25, 253 Broadway, New York
Sole Selling Agent for Martin VIBROPLEX and the Meco-graph Co.

20. Albright ad indicating membership in the Order of Railroad Telegraphers (O.R.T.). The Railroad Telegrapher, December 1914.

Typewriters Sending Machines

Any make. Any style. New or Re-manufactured.
Lowest Prices and on easy terms, \$3.00 per month.
All machines guaranteed in every way and kept in repair for six months from date of purchase without charge.
The DUNDUPLEX TRANSMITTER, the best sending machine by every test. Handsome in design and simple in construction.
NIGHT LETTER WORD COUNTER, \$2.00.
The name of Albright has been honorably identified with the typewriter trade for the past ten years.

Send orders through the MUTUAL INVESTMENT ASSOCIATION, New York City or Washington, D. C. or through the SECURITY SAVINGS SOCIETY, Chicago, Ill.
For further particulars address,

J. EUGENE ALBRIGHT
253 Broadway NEW YORK CITY

21. Ad from Postal Telegraph, March 1911.

BACK TO COURT

Although ads (Fig. 22) all through 1914 listed Albright as the sole selling agent of the "Martin Vibroplex and Mecograph Co.," it's doubtful he ever had any intention of continuing production of the Mecograph. No Mecograph has ever turned up bearing markings indicating it was a product of the Vibroplex-Mecograph merger. The only key found to bear witness to this marriage is the Model X Vibroplex shown in Figure 23, the base of which bears the gun metal blue finish with copper "tiger stripes" typical of the late model Mecograph No. 3.

WARNING TO INFRINGERS OF THE MARTIN "VIBROPLEX"

STILL ANOTHER VICTORY IN THE FEDERAL COURTS UPHOLDING OUR PATENTS

The United States Court, Cincinnati, has granted an Injunction restraining James M. Dickson (Mt. Auburn Specialty Co.), and all his agents, associates, confederates and employees, from making and selling all kinds of telegraph keys or transmitters or parts thereof, similar to those heretofore advertised by him, or such as in any manner infringe upon United States Patents No. 812,183 and No. 842,154. This is in addition to the injunctions recently obtained by us in United States Court of Chicago, restraining similar infringement by Max Levey (Ator Electric Novelty Co.), also Injunction in United States Court at St. Louis restraining Oliver M. Thomas (O. M. Thomas Electric Co.) from similar infringements, of which the users of sending machines have already been notified. All parties are hereby warned that they will be prosecuted both for damages and for contempt of Court if they violate either of said injunctions.

All who are now using Sending Machines purchased either from said James M. Dickson (Mt. Auburn Specialty Company), from said Oliver M. Thomas (O. M. Thomas Electric Co.), from said Max Levey (Ator Electric Novelty Co.), or from the agents of either, are daily liable to prosecution for contempt if they continue such use. Those who desire to escape such liability may do so on terms of which we will advise them, provided they communicate with us promptly.

THE MAN BEHIND THE GUN

May be all right, but if the gun is no good, the man will do little damage. Just so in the case of the transmitting instrument. If the instrument is a cheap imitation of the original standard article, the man will soon revert to the old-fashioned key as the choice between two evils. If the man is well informed at the start, however, he will purchase a Martin Vibroplex, which has back of it the accumulated experience of H. G. Martin, the originator of the device. It is not logical to buy an instrument which is recommended as being "just as good."

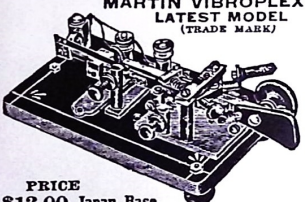
Don't waste time and money on imitations. Get the genuine and see that H. G. Martin's name is on your machine.

MARTIN VIBROPLEX AND MECOGRAPH CO.
DEPARTMENT "W"

J. E. ALBRIGHT, Sole Agent

253 BROADWAY **NEW YORK**

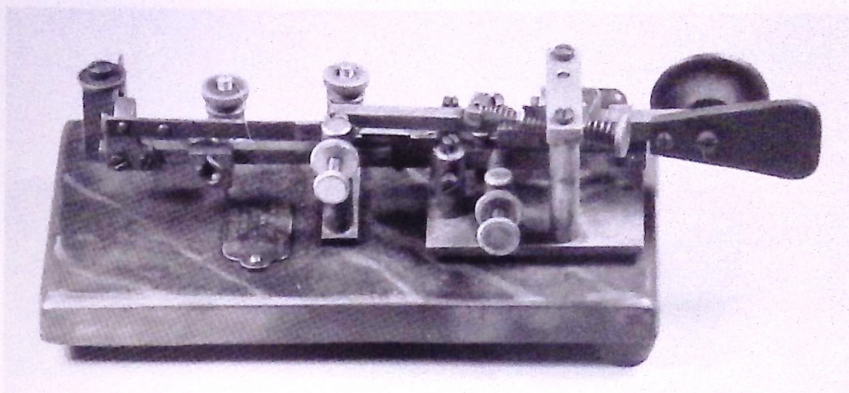
MARTIN VIBROPLEX
LATEST MODEL
(TRADE MARK)



PRICE
\$12.00 Japan Base
\$14.00 Nickel Plated Base

22. Ad proclaiming Martin Vibroplex and Mecograph Company. *Journal of the Telegraph*, March 20, 1914.

There's not much doubt that Albright was after the Coffe patent. His first ad in *The Railroad Telegrapher* (Fig. 24) after the patent purchase declares, "Patents covering our instruments have been sustained by the United States Circuit Court of Appeals for the Second Circuit (New York) and by the United States District Court for the northern district of Ohio. . . and we will vigorously prosecute in the United States District Court any other parties infringing our patents." Albright's first act after signing the purchase and sales agreement with Nellie Bellows must have been to call his lawyer and tell him to "run, don't walk, to the nearest court and sue somebody!"



23. Model X Vibroplex with Mecograph finish, ca. 1914.

Boy, did that somebody deserve suing! Max Levey, doing business as ATOZ Novelty Company in Chicago was not only building a key that looked and worked exactly like a Vibroplex, he had the unmitigated gall to call it "The Improved Vibroplex" (Figs. 25, 26)!

Albright filed a patent infringement suit against Levey on behalf of Nellie Bellows and Mecograph Company. (She retained title to the patent until the final payment was made.) On December 22, 1913, in the

CHRISTMAS PRESENT SUGGESTION

There is nothing that will be more appreciated than the "Vibroplex" for a Christmas gift. Last year our orders for the holidays were laid out on account of same not being received early. All who wish to make a present of the "Vibroplex" please send in orders early.

**The Vibroplex Can
Be Used by Any
Telegraph Operator**

**Genuine Old-Style Single Lever
Horace G. Martin Vibroplex**

**Japanned Base,
\$10.00
Nickel Plated Base,
\$12.00**

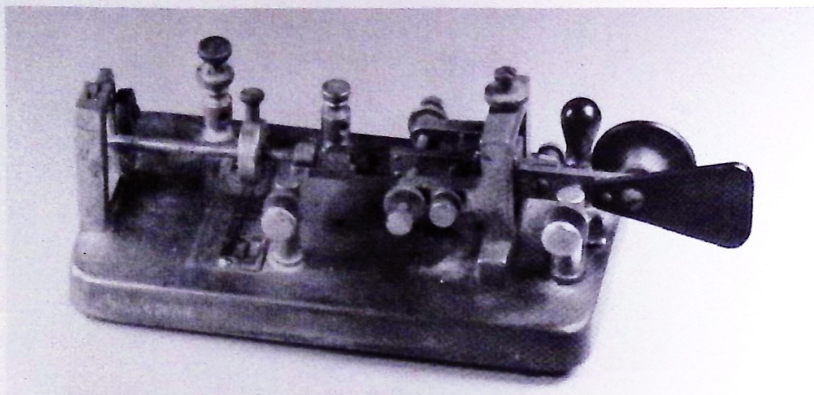
Patents covering our instruments have been sustained by the United States Circuit Court of Appeals for the second circuit (New York) and by the United States District Court for the northern district of Ohio (Cleveland). A suit is pending in the United States Court against another infringer, and will be tried shortly, and we will vigorously prosecute in the United States District Court any other parties infringing our patents.

J. E. ALBRIGHT,

Sole Selling Agent for Martin VIBROPLEX and the Mecograph Co.

253 Broadway, New York

24. Ad admonishes infringers. The Railroad Telegrapher, November 1913.



25. Improved Vibroplex by ATOZ Novelty Co., ca. 1914. Smiley White Collection.

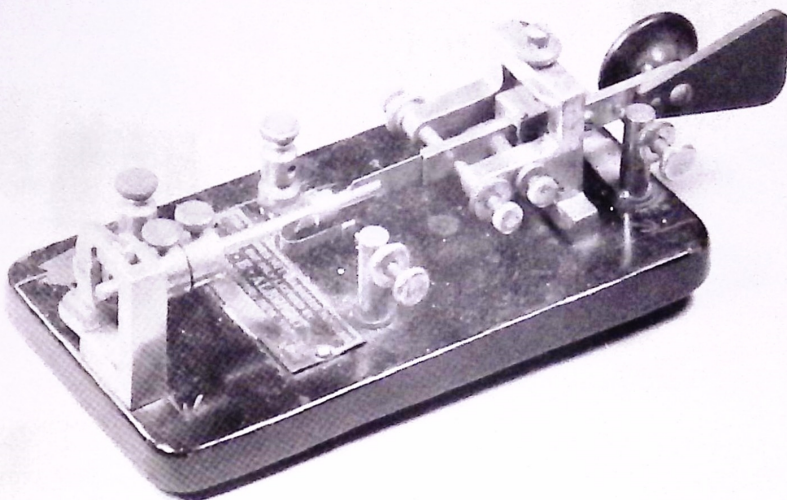
District Court of the United States, Northern District of Illinois, Eastern Division, Hon. Kenesaw M. Landis, District Judge presiding, it was decreed that the Coffe patents "are good and valid in law as to Claim 11 thereof . . ." He went on to say, ". . . the defendant, Max Levey, doing business as ATOZ Electric Novelty Company, has infringed upon said Letters Patent." He issued a perpetual injunction forbidding Levey and his associates "from directly or indirectly making, constructing, causing to be made, using, causing to be used, selling, causing to be sold, advertising for sale, working, putting into practice, operation or use, telegraph keys like or similar to those heretofore made, used, sold and advertised for sale, or controlled by the said defendant," plus another two or three paragraphs of things Levey should not do. Finally the Judge awarded Bellows damages and court costs to be determined.



26. Label of the Improved Vibroplex. Smiley White Collection.

This decision caused more than a little stir in the telegraph community. An article in the May 1914 *The Railroad Telegrapher* states that the suit by Mecograph against ATOZ Novelty was causing confusion and, moreover, "quite a number of railroads have issued instruction that all telegraphers employed by those companies must remove all sending machines in use other than the Mecograph or Martin Vibroplex, the

latter company having been absorbed by the former [sic], and many of those interested have appealed to the Order [Order of Railroad Telegraphers] to advise them as to their rights in the matter." In the same issue of *The Railroad Telegrapher*, the following letter is addressed to W. S. Campbell, General Counsel O.R.T.: "Dear Sir: I enclose herein copy of temporary injunction granted by Judge Landis in Chicago against a party by the name of Levey, which is self-explanatory. Suppose that I purchased one of the sending machines from Levey a year ago. Is there anything in that injunction which would prevent me from continuing to use the



27. Key of unknown origin with an Albright license, ca. 1914-1915.

machine at this time? Kindly give me an opinion on this matter. Yours truly, L. W. Quick, Grand Secretary and Treasurer."

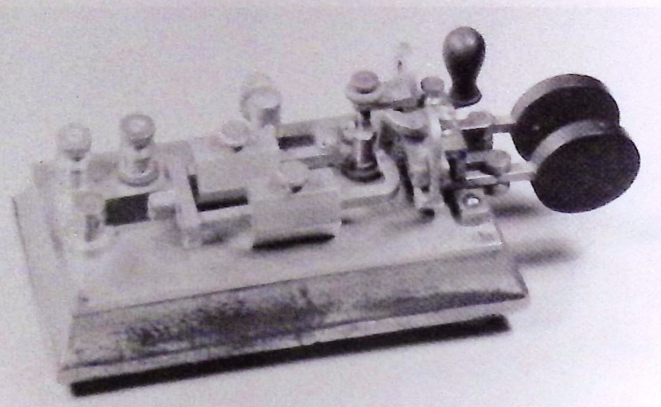
Campbell's reply runs over a page (what do you expect from a lawyer?) but is summed up in one key paragraph: "All persons using the telegraph keys become infringers, but only such persons are affected by the decision as are made parties defendant in that case or in some other proceeding. The injunction granted in that case, or in any other case, against the use of said telegraph keys, does not affect the individual owners of telegraph keys, and will not prevent them from using the telegraph keys, which they have purchased, unless they are made parties by name, and served with a regular summons in a suit for infringement."



28. Close-up of Albright license in Fig. 27.

Campbell goes on to say, "It is most likely that the patentee will endeavor to secure his damages and profits in suits against the agents, distributors, and makers of these keys . . . and it is not likely that an attempt will be made to enjoin the use of these keys by the individual owners who have purchased them from the distributors or manufacturers." Campbell obviously didn't know Albright!

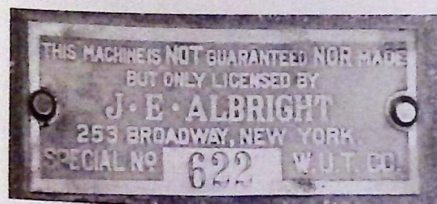
Albright followed this victory immediately by filing suits against James M. Dickson (Mt. Auburn Specialty Company), Oliver M. Thomas (O. M. Thomas Electric Company), and even his old friends at



29. Dunduplex key, ca. 1914–1915.

Dunduplex. He didn't stop with the manufacturers. His magazine ads throughout 1914 carry the admonition that all those who use sending machines by the infringing makers "are daily liable to prosecution for contempt if they continue such use. Those who desire to escape such liability may do so on terms of which we will advise them, provided they communicate with us promptly."

Albright's terms were that each owner of an infringing instrument must buy and affix to that instrument a tag which read, "THIS MACHINE IS **NOT GUARANTEED NOR MADE BUT ONLY LICENSED BY J.E. ALBRIGHT, 253 BROADWAY, NEW YORK. SPECIAL NO. _____**." Figures 27 and 28 show a no-name machine with the Albright license. Figures 29 and 30 show a Dunduplex with an Albright license



30. Base of Dunduplex key in Fig. 29, showing Albright license.

on the bottom. The Dunduplex carries the appellation W.U.T. after the special number. This indicates that the machine was to be used on circuits of the Western Union Telegraph Company. Reportedly the price for one of these licenses was \$2.00. Since serial numbers over 2000 exist today, Albright must have collected a tidy bit of extra income. Exactly how he coerced all these telegraphers to purchase the licenses is not known. Perhaps he actually hauled a few into court, although this is unlikely. No published

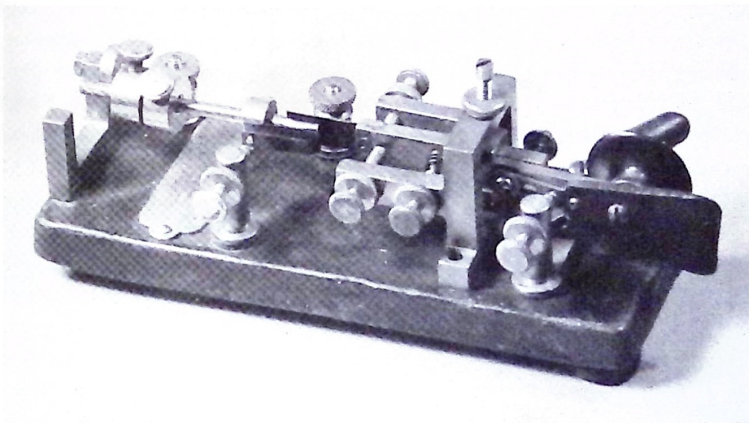
accounts or court cases of such an action have been found. More likely he simply threatened the major telegraph companies and railroads with lawsuits for allowing the use of the infringing machines on their circuits and the companies did the coercing of their employees to avoid the legal entanglement.

Whatever the method, the result was that Albright collected damages from the infringing manufacturers, a license fee from the unwitting buyers, and cornered the future market as the exclusive province of Vibroplex. If old J. E. were still around, one can imagine Harvard offering him a chair in their School of Business.

7

A NEW KEY, A NEW COMPANY, NEW KEYS

While Albright was out doing battle with the infringers, Martin was hard at work in his shop making sure there would be sufficient stock to fill the void created by Albright's labor. In the summer of 1914, Martin introduced a new model to the line, the Vibroplex No. 4 (Fig. 31). An ad in the August 1914, *Journal of the Telegraph* (Fig. 32) describes the new key as "small enough to carry in the pocket." The No. 4 was a scaled-down version of the standard Vibroplex. The base was one inch narrower and a bit thinner than the full-sized machine and all the other parts were scaled down proportionately. The damper arrangement was also simplified. It was and still is a sleek efficient little machine, but at 2.5 pounds, it would put a fair-sized lump in your 501 Levis™. Pocket-sized, it was not.



31. Vibroplex No. 4, ca. 1914. Later named Blue Racer.

On the surface all was calm to the end of 1914 and the beginning of 1915, but the currents of change were running deep. On March 12, 1915, a certificate of incorporation was filed with the Secretary of State of New York for "The Vibroplex Company, Inc." The certificate lists the board of directors as James E. Albright, William W. Albright, and Estelle E. Albright.

Minutes of the meetings for Vibroplex Company Inc. show the first meeting of the board of directors was held March 16, 1915. James E. Albright was elected president, Estelle vice-president, and William secretary-treasurer. At the second meeting held July 9, 1915, a set of by-laws was proposed and adopted. Upon adoption of the by-laws a motion was made and seconded in which James E. Albright was made General Manager of the Company with instructions to "look after the affairs of the company and carry on its general business and to exercise such powers as usually belong to the general manager of a company."

Announcing the NEW MODEL-VIBROPLEX No. 4

Small enough to carry in the pocket.

An achievement in sending machine construction.

In announcing the new model—VIBROPLEX Number 4—we point out that this small model embodies every feature that has made the Famous Martin Vibroplex the most efficient sending machine manufactured.



VIBROPLEX No. 4

**A Model of Beauty
and Efficiency.**

A marvel of speed, smoothness of action, and ease of manipulation. Made especially to meet the demands of that large army of telegraph operators who desire a small, light-weight but efficient sending machine. The same sending possibilities, the same carrying qualities that characterize the work of the Martin Vibroplex, together with the same strength and durability, are found in the Vibroplex No. 4. The Number 4 is less than half the size of the Old-Style Single Lever, and weighs only two and one-half pounds.

Handsomely finished in nickel plate with an attractive

base of blue enamel \$10.00

Nickel-Plated Base 12.00

Model "X" Black Japan Base 12.00

Model "X" Nickel Plated Base \$14.00

Old-Style Single Lever Black Japan Base 10.00

Double 10.00

Extra for Nickel Plated Base 2.50

Carrying Case with Lock 2.50

without Lock 2.50

WARNING TO INFRINGERS OF THE MARTIN VIBROPLEX. The patents controlled by this Company covering telegraphic transmitters are broad and fundamental and have been sustained by decisions both of U. S. District Courts and of U. S. Circuit Court of Appeals. We warn every user of an infringing machine that he is equally guilty of infringement whether he makes, or uses, or sells such a machine; and also if he assists another to make, or use, or sell such a machine. One who makes or assists another to make, one who uses or assists another to use, and one who sells or assists another to sell any such machines is an infringer and will be held responsible as such. If we know of no sending machine capable of successful use that does not infringe our patents.

MONEY ORDER OR
REGISTERED MAIL

J. E. ALBRIGHT

Sole Agent Martin Vibroplex and Mecograph Company

253 BROADWAY
NEW YORK

32. First known ad for the "pocket sized" No. 4. Journal of the Telegraph, August 1914.

The minutes of this meeting go on to say: "The purpose for which this Company has been organized being to take over and operate a number of patents for telegraphic sending machines owned and controlled by James E. Albright. Mr. Albright now proposes to the directors to assign to the Company, the following letter patents of the U.S. all issued to Horace G. Martin and acquired by said Albright through various assign-

ments: 732,648, issued June 30, 1903; 767,303, issued August 9, 1904; 842,154, issued January 2, 1907; 1,042,457, issued October 29, 1912; 1,043,449, issued November 5, 1912 (see appendix); and to accept in payment therefore eight shares of the capital stock of the Company. . . . Said Albright further offered to the Company at its option, the privilege and permission of purchasing, taking over and operating under all his rights and interests in and to a patent number 812,183 (see appendix) issued January 19, 1906 [sic], under his license and agreement with Nellie E. Bellows on such terms as can be agreed upon . . ."

The Albrights were in and Martin was out—out in the shop designing and building keys. Since Martin continued to work for the company, we can only assume that this new arrangement was considered beneficial by all parties, not a hostile takeover.

On August 4, 1917, Martin filed application for his sixth patent (No. 1,260,008; see appendix). This was another attempt at a pocket-sized key, or at least a key that presented a small footprint on the user's desk. Figure 33 shows a picture of the vertical Vibroplex, nicknamed

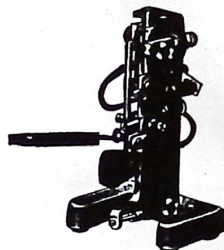


33. Vibroplex Upright or Vertical, ca. 1916-1919.

the "wirechief's key." Supposedly the wirechief's desk was always so cluttered there was no room for a full-sized key. The mechanism of the vertical is based on the Direct Point or Model X machine using only one contact for both dots and dashes. The vibrating arm is, however, mounted vertically instead of horizontally which allows it to have a base only 3.5 inches wide by 2.75 inches deep. The machine was also called the Martin Upright. The last company ad found for a vertical was the February 1919 *Telegraph and Telephone Age* (Fig. 34). Judging from their scarcity the verticals were not a popular item. An even scarcer model (Fig. 35), the Martin Midget, made its first appearance in the November 1918 *The Railroad Telegrapher*. At 15 ounces and with an articulated rear leg that swings into parallel with the base of the key, Martin probably came as close to a truly pocket-sized, fully functional semi-automatic key as it is possible to make. The Midget was advertised fairly regularly in *The Railroad Telegrapher* until December 1920.

Every Telegraph Operator

Should Learn
to Use the



Martin Vibroplex

Sending with the Vibroplex is just an EASIER, FASTER, BETTER way of telegraphing.

There's no tensing of muscles, no nerve strain; just a smooth, pendulum-like motion of the arm in pressing the lever from side to side—the machine does the work. Easy to learn. Illustration shows the "UPRIGHT," Martin's latest. Weight 1½ lbs.

Nickel-plated, \$15

OTHER VIBROPLEX MODELS

VIBROPLEX No. 4 (Pocket Size)

Blue Enamel Base \$15, Nickel-plated \$17

MODEL X (Single Contact)

Japanned Base \$15, Nickel-plated \$17

OLD STYLE SINGLE LEVER

Japanned Base \$15, Nickel-plated \$17

DOUBLE LEVER

Japanned Base \$15, Nickel-plated \$17

Immediate Shipment. Money Order or registered mail.

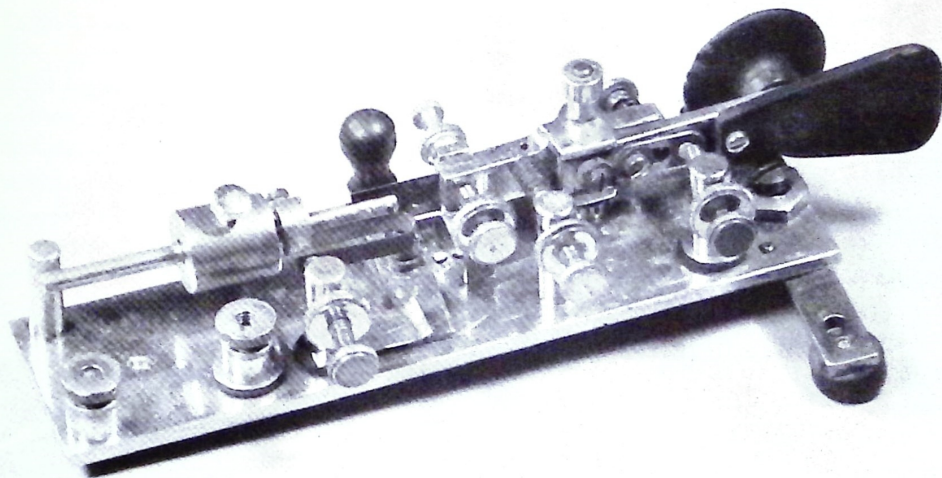
Liberal allowances on old machines.

THE VIBROPLEX CO., Inc.

233 BROADWAY, NEW YORK

Martin Vibroplexes and Macograph Transmitters

34. Last company ad for a Vertical.
Telephone and Telegraph Age, February 1919.



35. Martin Midget, ca. 1918–1920.

MARTIN LEAVES— THE COMPANY MOVES AHEAD AND UP THE STREET

On February 16, 1920, after 18 years of making telegraph keys and a nine-year association with the Albrights, Martin left the company and the telegraph business. According to an agreement in the company files, Martin sold, "... all his rights and interests in said telegraph sending machines and the business connected therewith, and all the machinery, tools, jigs, fixtures, etc., used in the manufacturer of said machines." He also sold, "... the sole and exclusive right to use of the name Martin and the name Horace G. Martin as a trade name, trade-mark, designation or description of, or in any manner associated with the making, using or vending of telegraphic sending machines." And finally, "Martin further agrees

Why Don't You Buy a NEW Vibroplex?

Martin's NEW 1921
Improved Genuine
Old Style Single Lever

Vibroplex

"There's no economy in patching up your old Vibroplex. It can't be expected to turn out the high-class work it did when it was new. It exhausts your patience and the patience of operators on the receiving end.

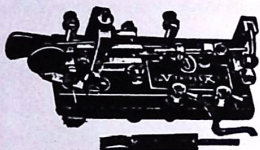
"You've replaced first one part then another. You've tightened the springs until there's no resilience in them. You've screwed it up here and let it out there with no better results.

"The trouble is—you need a NEW Vibroplex.

Pays to Buy a NEW Machine

Experience has proved that it is cheaper to buy a NEW machine at the start than to be always tinkering with an old one and nothing to show for it.

Only the other day you said you needed a new machine, but didn't feel like putting any more money on an old machine. Then what are you waiting for? Prices to compare. And if they should, allowances on old machines will come down, so where's the saving?



A Greatly Improved Machine
at the Old Price

Japanned Base \$17
Nickel Plated Base \$19

Notable Improvements in the New 1921 Improved Vibroplex

Improved Trunion Lever—More simple, more reliable and easier to manipulate.

Extra Heavy Contact Points—Insuring firm contact, better signals and longer life.

Reduced Size and Weight—Enhancing portability and appearance without detracting from the stability of the instrument.

Handsome Appearance—The sturdiness, graceful lines and beauty of the New 1921 Improved Vibroplex make it an instrument worthy a proud owner.

Get a NEW 1921 Improved Vibroplex

"Take my advice and get a NEW Vibroplex. I did, and I'm glad of it. I got a credit of \$5 on my old Martin machine, making the NEW Vibroplex cost but \$11. I figure I really saved money for I now have a machine that won't require any replacements for years. You say you're going to get a NEW Vibroplex? Good! You'll be glad you did."

Get Martin's New 1921 Improved Vibroplex and see what a vast improvement there is in this new model. Observe its ready response to your every command, the strong, clear signals, the easy manipulation, the unlimited speed, the simplicity and beauty—these, and many other features, all its own, will make the New 1921 Improved Vibroplex your life partner.

Pronounced by all to be the handsomest, the handiest, the easiest-to-operate, the most efficient sending machine ever built. Order your new Vibroplex NOW!

Model X, No. 4 (Blue Racer) and Double Lever also in stock

Protect Your Vibroplex from Dust, Dirt and Moisture

Get a handsome Dust-Lined Carrying Case. Keeps the machine free from dust, dirt and moisture, and insures safe keeping when not in use.

Patent lock and key. Finished in handsome black

lacquer, reinforced corners, lined throughout with plush, making it a most attractive, durable and serviceable case.

Each \$3

36. Ad showing the new "Bug" logo. The Railroad Telegrapher, September 1921.

that he will not directly or in aid of others, without the written consent of said The Vibroplex Company, Inc., engage in or become interested in the manufacture or sale of telegraphic sending machines within the United States for the period of ten years from the date hereof." This agreement specifies that Martin is to receive a total of \$6979.15. That may not sound like much today, but in 1920 it would have been considered serious money. It could also be assumed that Martin would not have agreed to the ten year non-competition clause if he had not thought the compensation adequate.

An ad in the October 1920 *Telegraph and Telephone Age* shows that Vibroplex had moved to a new address, 825 Broadway, New York. The company not only wanted to change its address, it wanted to change its image. The *Railroad Telegrapher* for September 1921 carried a Vibroplex ad (Fig. 36) that clearly showed the new "Bug" logo (Fig. 37). Since no key has yet been found with the 825 Broadway address on the old rectangular label, it's possible and perhaps even probable that the new logo was introduced in October 1920, when the company relocated.



37. The "Bug" logo, ca. 1920.

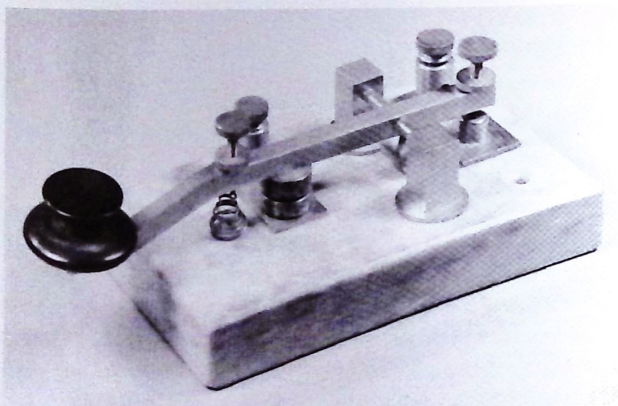
Martin re-entered the picture briefly in 1921. On December 10, 1921, he filed a patent application for a minor improvement in the way the keying lever was attached to the main vibrating arm. The improvement was incorporated in all models of Vibroplexes built after this time, and they also carry the patent number 1,445,226 granted to Martin on February 13, 1923 (see appendix). This probably was something he had been working on just before he left the company and didn't manage to complete until later. Martin, of course, would have had no other legal outlet for this patent in view of the non-competition clause in his buyout contract.

December 1922, found Vibroplex back in court, the Supreme Court, Kings County, to be precise. They were plaintiff in an "Action by the Vibroplex Company, Inc., against the Jacob May Realty Company, Inc., to recover a deposit on a contract to purchase real property." It appears that Vibroplex was trying to purchase land to erect their own factory to replace the leased lofts they inherited from Martin. They placed a \$2500 deposit on a property in Brooklyn, according to court records, but then found there was a covenant or restriction in the deed; "that there shall be no blast furnaces nor foundry of any kind whatsoever upon said premises, and that no Factory shall be erected within forty (40) feet of the line of said street."

Inasmuch as the company's prime purpose in buying this land was to erect a factory, this was no small impediment. Fortunately, Judge Dike saw things their way and ruled: "I direct judgment for the plaintiff . . ."

NEW ERA, NEW MARKETS, NEW FACES

Wireless telegraphy, both amateur and professional, was already in existence when Martin invented the Autoplex in 1902. Certainly by 1911 when Albright entered the scene, wireless was an established and growing industry. Yet for years Vibroplex never tried to crack that market. The reason is readily apparent. Wireless transmitters using spark gap technology were commonly keyed by turning the primary of a high voltage transformer on and off with a heavy duty key (Fig. 38). An amateur transmitter rated at 2000 watts (2 KW) could develop 18 to 20 amperes of current at 110 volts across the key contacts. Commercial transmitters used even higher voltages and currents. Clearly the $\frac{1}{16}$ of an inch contacts used on a Vibroplex could not handle this kind of abuse, and fitting the Vibroplex with $\frac{1}{4}$ inch diameter by $\frac{1}{4}$ inch thick solid silver contacts to achieve the 25 amp rating of the wireless key in Figure 38 was not practical either.



38. Clapp Eastham wireless key on marble base, ca. 1915.

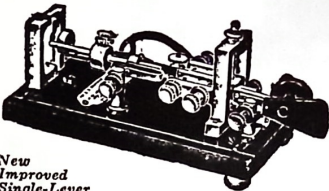
There were undoubtedly a few intrepid souls who hooked up a Vibroplex to a spark transmitter by means of a sensitive keying relay with heavy duty contacts. While this lash-up would have worked, it's doubtful that any significant increase in transmitted speeds could have been achieved. The raspy, relatively low frequency note of the spark transmitter could be difficult to copy at the best of times. Boosting the transmission speeds up into the regions a "bug" was capable of would have made copying the spark signal nearly impossible.

After World War I, however, great changes began to take shape. Thousands of radio amateurs joined the armed services when the United States entered the war in Europe. These amateurs gained much experience with the new vacuum tube technology.

Prior to the war, the vacuum tube had been far too expensive for the budget of the average amateur

Martin's New and Improved VIBROPLEX

Reg. Trade Marks Vibroplex Bug Lightning Bug



New
Improved
Single-Lever

Japanned Base, \$17 Nickel-Plated, \$19

Transmits perfect signals at any desired speed. Easy to learn and operate. Send continuously for hours without fatigue. Used and recommended by more than 85,000 wireless and commercial operators.

Special Large Contacted Vibroplex

Equipped with 3-16 inch contact points to break high current without use of relay\$25.
Sent on receipt of price

THE VIBROPLEX CO. Inc.

825 Broadway, New York Established 1890

39. The first ad in QST, February 1925.

wireless operator. After the war, however, some of these tubes became available at a more reasonable cost, though still not cheap, through government surplus outlets.

These amateurs with their wartime experience were quick to begin experimenting with the vacuum tube on the amateur radio wavelengths. By the early 1920s tubes were demonstrating their superiority over the spark transmitters with a vengeance. Transcontinental and transoceanic records were being established and then broken within days. Most of the records were being made with the ubiquitous vacuum tube at power levels that were mere fractions of those used in the "rock crusher" spark stations that had been king of the hill.

One of the significant side benefits of the vacuum tubes was that they were amenable to being keyed in their low current, low voltage biasing circuits. This was much safer for the operator, and it allowed lighter duty keys with much smaller contacts to be used.

Clinton B. DeSoto in *Two Hundred Meters and Down* relates that the American Radio Relay League (ARRL) had negotiated with the Secretary of Commerce to issue a new amateur radio license which would permit the use of several shorter wavelength bands. The new licensing regulations were issued July 24, 1924, with the following restrictions: "Continuous-wave telegraphy and loose antenna coupling only were to be permitted on the new bands; spark, i.c.w. [intermittent continuous wave], and radiotelephony were barred."

In February 1925, the Vibroplex Company placed its first ad in *QST* magazine (Fig. 39), the official publication of the ARRL. The ad featured their "Special Large Contacted Vibroplex. Equipped with 3-16 inch contact point to break high current without use of a relay." Vibroplex has been a faithful advertiser in *QST* ever since.

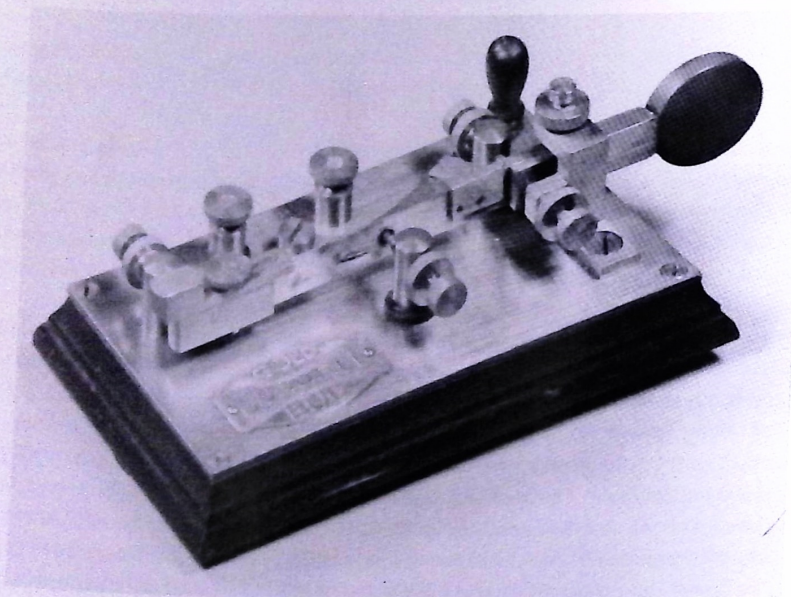
The June 1926 *QST* contained a Vibroplex ad on page 78 which featured a testimonial letter from the Francis P. Houdina Company, "Builders and Operators of America's First Radio Operated Automobile." What is significant about the letter is not its originator or the subject, but rather to whom it's addressed: the letter is marked "Attention Mr. La Hiff." It's hard to believe in a coincidence that has two La Hiffs working for Vibroplex, so we can only conclude that this was the John La Hiff who will figure more prominently in future company business.

COURT, KEY AND COURT

The beginning of 1927 found Vibroplex back in familiar surroundings, the Second Circuit Court of Appeals. At this time the Bellows and many of the old Martin patents had expired, the requisite 17 years having passed. A number of observant folks took note of this and began to produce semi-automatic or speed keys. Most of them were reasonably faithful copies of the original Vibroplex or the Mecograph No. 3 actions which were no longer protected by patent.

Bunnell, however, chose to build a machine (Fig. 40) which had some features similar to those of the X-model. Vibroplex brought suit in defense of its X-model patent, 1,042,457 (see appendix), which still had two years to run. In the original suit the District Court judge for the Southern District of New York found in favor of Bunnell. On January 17, 1927, Judge Campbell upheld the lower court.

The year 1927 wasn't to be a total wash, however. *The Railroad Telegrapher* in June 1927 announced a brand new key, the Vibroplex No. 6, known as the Lightning Bug (Fig. 41). This was a full-sized key but with a style that was radically different from the old single lever key, although the action was essentially the same. The new key eliminated all the cast parts except the base. Vibroplex probably did not do its own foundry work, so this new design would significantly reduce the number of sub-contracts.



40. Bunnell Gold Bug, ca. 1927.

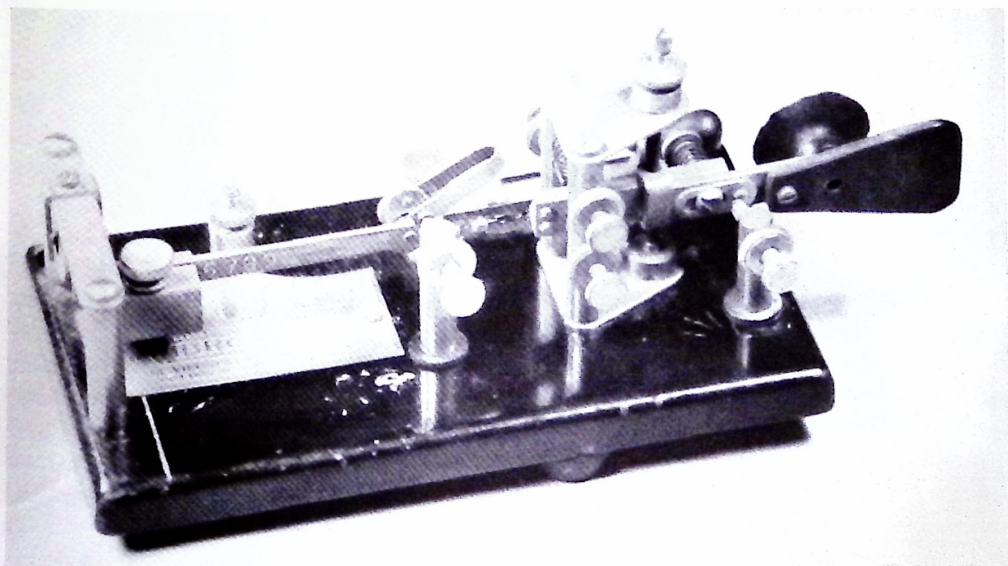
As Martin had been absent from the company for a number of years by this time and the Albrights' talents seemingly ran to entrepreneurship rather than machinery design, it gives one pause to wonder exactly who did create this new machine.

We have seen that a Mr. La Hiff was at work with the company in 1926. We will see that a 1940 patent by J. A. La Hiff contains the design for the Champion key which is a direct descendant of the Lightning Bug. John La Hiff is also credited with the design of the Presentation model in the post World War II era. While it can't be proved beyond a shadow of a doubt, a strong circumstantial case can be made that the La Hiff of the 1926 ad was in fact John A. La Hiff and that he designed the No. 6 as well as the Champion, Zephyr and Presentation models.

While our key designer, whoever he was, worked at his drawing board, Vibroplex Inc. was readying itself for another rendezvous with J. H. Bunnell at the usual place. In January 1928, Vibroplex, as plaintiff, filed an "Appeal from a decree of the District Court for the Southern District of New York dismissing a bill in equity for the infringement of the plaintiff's registered trade-mark 'Bug'."

Judge Lerner Hand was not sympathetic. In his decision he cites Section 5 of the Trade-Mark Act (15 USCA 85) which forbids the registration of a mark which consists "merely in words or devices which are descriptive of the goods with which they are used."

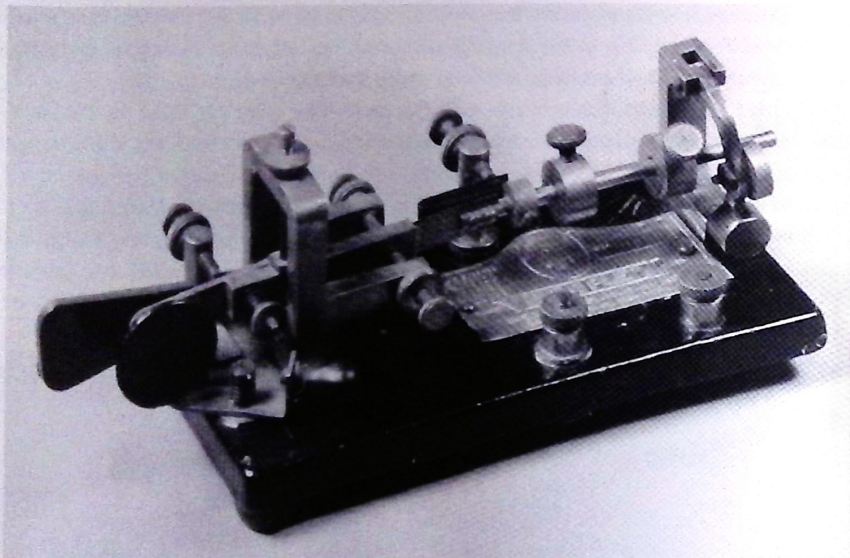
In other words, if you make a brown football you cannot register the word "Brown" as a trade-mark because brown is merely a descriptive term for the football. The Judge ruled against Vibroplex and in favor of Bunnell, who had named their key the Gold Bug, because the word bug had become a generic name describing all sending machines.



41. Vibroplex No. 6, ca. 1927. Later named *Lightning Bug*.

MORE KEYS, MORE MYSTERY

The Martin Junior (Fig. 42) was first advertised in the February 1934 *The Railroad Telegrapher* (Fig. 43). It's basically a standard Vibroplex on a $\frac{1}{2}$ inch narrower and $\frac{1}{4}$ inch shorter base. It became just Junior in the April 1937 *QST* and the Vibroplex Junior in the September 1939 *QST*. It was last advertised in the October 1939 *QST*.



42. Martin, Jr., ca. 1934.

According to the ad in the June 1935 issue of *The Railroad Telegrapher* (Fig. 44), Vibroplex moved up and across the street to 832 Broadway. This presents a minor mystery. No keys have shown up with the 832 Broadway address on them; yet the company advertised from this address for about six years. By the same token, there are a good many keys around with the 796 Fulton Street, Brooklyn address, which has never been seen in magazine advertisements.

An old undated advertising brochure in the company files (Fig. 45) finally yielded the solution. This brochure contained both the Manhattan and Brooklyn addresses. It appears likely that the keys were being manufactured in Brooklyn and marketed from Manhattan.

On September 29, 1938, Hilda Levins, Sarah Burke, and Julius Love, all of 233 Broadway, New York City, received a certificate of incorporation for the Martin Research & Manufacturing Corporation in the state of

New York. Who the devil are Levins, Burke, and Love? That's another unsolved mystery.

What is known is that the president and vice president of M.R.&M. were J. W. Martin and R. W. Martin respectively, the sons of Horace G. Martin.

An agreement in the Vibroplex files dated October 1, 1938, showed that the Martins doing business as Martin Research and Manufacturing Corporation "have invented a sending machine of the same type as said Vibroplex, but with additional improvements thereon, which are believed to be patentable. It is the desire of all said parties that a fair arrangement be arrived at whereby said new Vibroplex machine may be built and marked [marketed?] in connection with said old Vibroplex machines; and for all said parties hereby agree as follows: Said Martins shall have the exclusive right to manufacture all said Vibroplex or sending machines, and said Vibroplex Company shall have the exclusive right to the sale thereof to users and to dealers."

The agreement went on to detail production schedules, prices, and the turnover of all tools, jigs, fixtures, and materials used to build the Vibroplex sending machines to the Martin brothers. Paragraph 10 was particularly revealing: "Toy sets of telegraphic apparatus may be devised by said Martins, incapable of use for sending commercial messages, and submitted to the Vibroplex Company. Should the latter desire the sole right to sell said apparatus, it may have such right on the same terms except price to be and agreed upon as set forth supra for the sale of said four types of sending machines."

Clearly Vibroplex had no intention of allowing the Martins to in any way compete with the company. Just as clearly the Martins had intentions of their own. *The Railroad Telegrapher* in April 1939 carried an ad (Fig. 46) for M.R.&M. which announced: "E. M. Weber has joined us! Martin Research and Mfg. Corp. is happy to announce the association of E. M. Weber as Secretary and Treasurer. E. M. Weber was formerly manager of the sales department of the Vibroplex Co., Inc., and was associated with that concern for over twenty years." The same ad also pictured a sending machine under the name Martin Flash Key, which was a clone of the Vibroplex No. 6, one of the four machines that Martin was building for Vibroplex. Figure 47 shows another Martin Flash Key.

Buy a NEW Bug Now! It Pays in Better, Easier Work . . .

GENUINE MARTIN VIBROPLEX
Reg. Trade Marks: Vibroplex Bug, Lightning Bug

Demand the Genuine **IN COLORS**
Blue
Green
Red
Black



Improved Model Illustrated
Black or Colored, \$17
Nickel-Plated, \$19
Easy-Working No. 6 same price

MARTIN JUNIOR \$10

Why be misled by offers of anything but the GENUINE MARTIN VIBROPLEX? MARTIN JUNIOR embodies all standard Martin features and the quality of the old difference is in the new. Furnished on 2 1/2 pound black japanned base. Avail yourself of this low price and buy a NEW bug now! Remit by money order or registered mail.

THE VIBROPLEX CO., Inc.
825 Broadway, J. E. Albright, President, Member O
New York, N. Y. R. T. Grand Div., Cert. 395

43. First ad for Martin Junior. *The Railroad Telegrapher*, February 1934.

Play Safe!

Demand the Genuine Martin VIBROPLEX
Reg. Trade Marks: Vibroplex, Lightning Bug, Bug

BUY NOW!



Improved Model Illustrated
Black or Colored, \$17
Nickel-Plated, \$19
Easy-Working No. 6 same price

The Bug that satisfies the world's finest operators—can be trusted to satisfy you. After using an old bug, you'll doubly appreciate the smooth, effortless action of a Brand New Vibroplex.

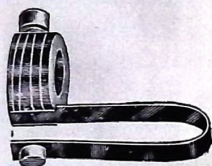
MARTIN JUNIOR \$10

Small—but has all Standard Vibroplex features, 2 1/2-pound black japanned base. A great bug and a great bargain at this low price. Remit by money order or registered mail.

THE VIBROPLEX CO., Inc.
432 Broadway, J. E. Albright, President, Member
New York, N. Y. O. R. T., Grand Div., Cert. 395

44. Ad showing new 832 Broadway address. *The Railroad Telegrapher*, June 1935.

While we are always pleased to furnish any new parts for the VIBROPLEX, we find in a great many cases it is to the customer's advantage to trade his old VIBROPLEX in for the latest model MARTIN VIBROPLEX, equipped with the new trunnion lever and large contact points, Mr. Martin's latest discovery.



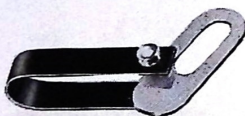
Dot Contact Spring
(for No. 4, Improved & Junior Models)



Dash Slide
(for all models)



Contact Screw
(for all models)



Dot Contact Spring for No. 6

THE VIBROPLEX CO., Inc.

J. E. ALBRIGHT, President

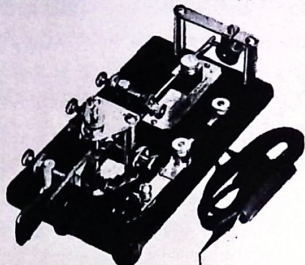
832 BROADWAY
New York, N. Y.
ALgonquin 4-4828

796 FULTON STREET
Brooklyn, N. Y.
NEvins 8-2821

Cable Address: "VIBROPLEX" New York

E. M. WEBER HAS JOINED US!

Martin Research and Mfg. Corp. is happy to announce the association of E. M. Weber as Secretary and Treasurer. E. M. Weber was formerly manager of the sales department of the Vibropiles Co., Inc. and was associated with that concern for over twenty years.



TELEGRAPHERS—

Cash in on This

**AMAZING
OFFER!!**

You Can Now Buy

**MARTIN
FLASH KEYS**

the "new" line of semi-automatic single lever sending machines at new, exceptionally low prices. Reliable Single Lever Key—Nickel plated, \$15.95

Your choice of the No. 6 (shown here) or the old reliable Single Lever Key—Special Trade-in offer: Send us your old "Bug" and we will gladly allow you \$10.00 off the trade-in, replacing it with a new, precision built Martin Flash Key for only **\$9.95**

Every machine factory tested and backed by an unconditional money-back guarantee. Don't delay—Mail your order (with check or money order) NOW to:

MARTIN RESEARCH AND MFG. CORP.

34 Park Place, New York, N. Y.

Our complete catalog, in which is featured the new Martin "Piggy-Back" Key is yours for the asking. Agents wanted.

J. W. Martin, Pres. R. W. Martin, Vice-Pres. E. M. Weber, Secy.-Treas.

46. Ad. The Railroad Telegrapher, April 1939.

Announcement

We wish to announce the sale of the patents and all interests in the complete line of Martin Flash Keys to J. H. Bunnell & Company, of 215 Fulton Street, N.Y.C.

We are taking this opportunity of expressing our thanks to you for your patronage and to assure you that the Bunnell Company will carry on the manufacture and distribution of them.

Martin Research & Mfg. Company
New York City.

MARTIN PROFESSIONAL FLASH KEY
No. 6

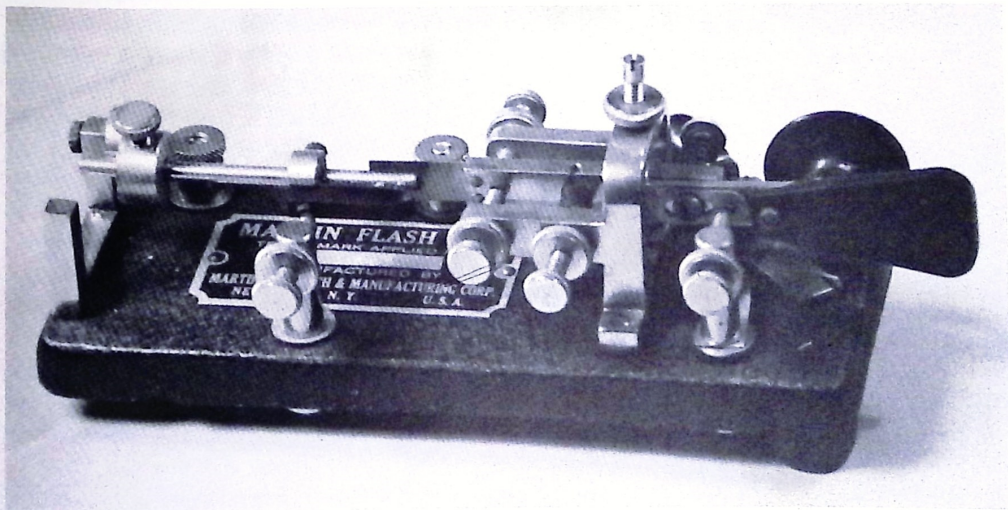


The J. H. Bunnell Company takes pleasure in announcing the purchase of the patents and exclusive rights to manufacture and distribute the complete line of Martin Flash Keys.

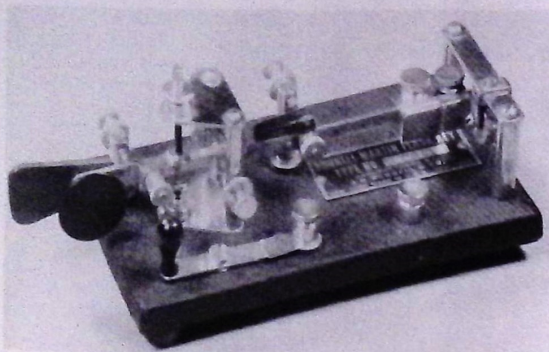
As one of the oldest manufacturers of telegraph equipment, in the industry, we are glad to welcome this product to our regular line of Keys, Sounders, Relays, Repeaters, Recording equipment, and allied instruments.

J. H. Bunnell & Company
Bunnell Building
215 Fulton Street
New York City.

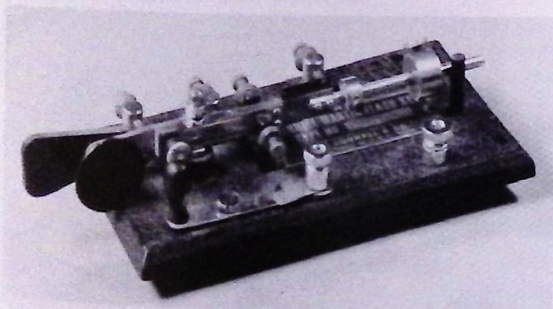
48. Ad. Telegraph and Telephone Age, December 1939.



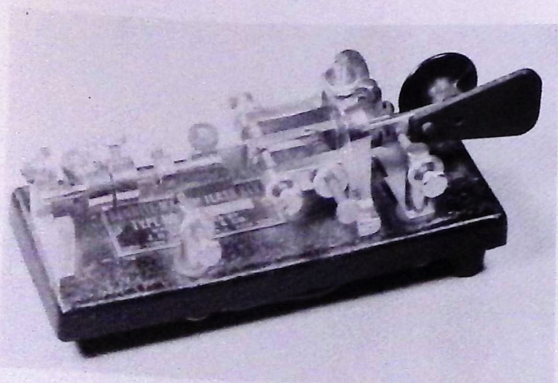
47. Martin Flash Key, ca. 1939.



49. Model 5-45, Bunnell Martin Flash Key, ca. 1940.



50. Model 5-46, Bunnell Martin Flash Key, ca. 1940.



51. Model 5-47, Bunnell Martin Flash Key, ca. 1940.

In one stroke the Martins had co-opted one of Vibroplex's key people and pirated one of the company's most popular keys. Albright must have been livid! He probably stripped the dial right off his phone trying to call the lawyers. No records have been discovered that tell exactly what transpired. That the Martins were forced out of business seems apparent from this ad (Fig. 48) in the December 1939 *Telegraph and Telephone Age*: "Announcement: We wish to announce the sale of the patents and all interests in the complete line of Martin Flash Keys to J. H. Bunnell & Company, of 215 Fulton Street, N.Y.C. We are taking this opportunity of expressing our thanks to you for your patronage and to assure you that the Bunnell Company will carry on the manufacture and distribution of them. Martin Research & Mfg. Company, New York City."

Figures 49, 50, and 51 are Bunnell Martin Flash Keys, produced by Bunnell after the acquisition of M.R.&M.

CHANGES, NEW KEY, CHANGES, WAR

With the exception of the Norcross keys and the No. 4, Vibroplex had initially offered keys in just two finishes: a black enameled base with nickel-plated parts, or an all nickel finish for a slight additional cost. In June 1929 a QST ad (Fig. 52) advised that Vibroplexes are "now available in attractive colors at no additional cost. Blue, Green, Red, and Black, \$17. Nickel plated, \$19." The Norcross keys appear to have been offered only in unplated brass on a black enameled base while the No. 4, or Blue Racer, was introduced in 1914 sporting a cobalt blue enameled base and was also available with a nickeled base. The 1930s were the beginning of the age of chrome, however, and Vibroplex wasn't going to miss out.

Figure 53 shows a November 1939 ad from QST introducing the Champion model. The Champion (Fig. 54) was basically a Lightning Bug with a simplified damper arrangement, no circuit closing lever, and other refinements that John La Hiff patented January 16, 1940. The Champion also introduced for the first time the use of chrome plating and crackle finished paints. The Champion was discontinued in 1982.

Ads in QST for the remainder of 1939 and the first two months of 1940 are identical, but in March 1940 the ad is modified to read, "Write today for descriptive literature of other Vibroplex models including the sensational 1940 De Luxe models." A December 1940 QST ad (Fig. 55) pictured the No. 6 or Lightning Bug in its De Luxe chromium trim with a "PATENTED JEWEL MOVEMENT." Figure 56 is a De Luxe Lightning Bug.

The 1940 ARRL *Handbook* for the first time refers to the standard model single lever Vibroplex as the "Improved Original Vibroplex." Later ads shorten this to the "Vibroplex Original" or just "Original." The 1941 ARRL *Handbook* shows that all models were finished with chrome plated parts on a black crinkle finished base for standard trim and all chrome plate (including base) for the De Luxe models. The 1941 ARRL *Handbook* also reintroduced the Blue Racer, which had not been advertised since early in 1932, and had not been included in the list of sending machines to be built by the Martin brothers in that infamous 1938 agreement.

**The NEW Easy-Working
VIBROPLEX No. 6**
Reg. Trade Mark Vibroplex Dist Lightning Bug
In Attractive Colors

Fast or slow—the easiest way to send. Easy to learn. Simply press the lever—it does the rest. Now available in attractive colors at no additional cost. Blue, Green, Red and Black.....\$17 Nickel-Plated.....\$19

18 New Features

Famous Improved VIBROPLEX
Used by tens of thousands of operators because of its ease and perfection of sending. Colors: Blue, Green, Red and Black.....\$17 Nickel-Plated.....\$19

Special Radio Model Extra Large, Specially Constructed Contact Points for direct use without relay. Colors Blue, Green, Red and Black.....\$25 Specify color when ordering

Remit by Money Order or registered mail
THE VIBROPLEX COMPANY, Inc.
825 Broadway, New York City
Cable Address: "VIBROPLEX" New York

52. First ad offering Vibroplexes in choice of colors. QST, June 1929.

Here It Is! The "CHAMPION"
Genuine **VIBROPLEX** only **\$9.95**

Like all true champions, the new Vibroplex "CHAMPION" defies competition. As efficient in performance as it is handsome in design, the "CHAMPION" is our answer to the demand for a BUG of established quality, proved sending ability and assured ease of operation. And in addition to these outstanding sending features, this new BUG is priced so low no one need be without it. Designed primarily for the amateur, professional operators will find it amply qualified to give an expert account of itself anywhere.

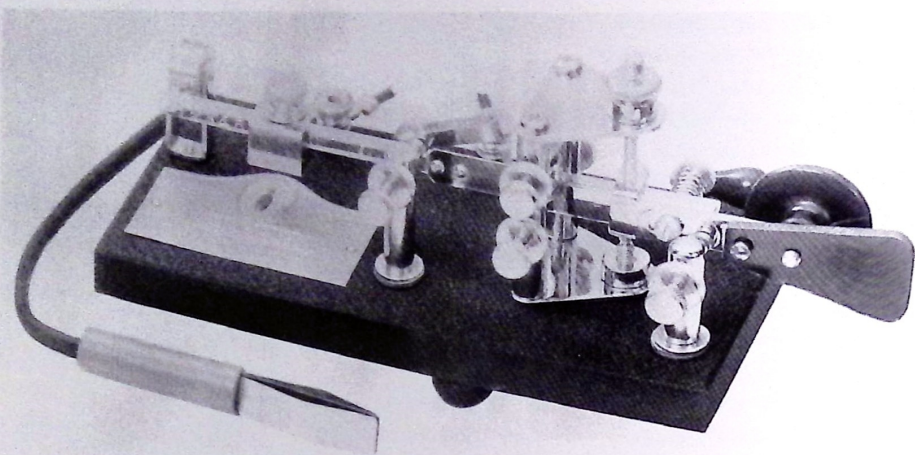
See your dealer today. If he cannot supply you, write or order direct from

THE VIBROPLEX CO., Inc.
832 Broadway New York, N. Y.

An exceptional key having exceptional sending qualities. Chrome plated. Black crinkle standard size base. Standard size contact points same as more expensive models. Furnished without circuit closer, cord and wedge.

The BUG Grindmark identifies the Genuine Vibroplex

53. First ad for the Champion. QST, November 1939



54. The Champion was available in black (shown) and later on in beige. Photo from Vibroplex Company.

PATENTED JEWEL MOVEMENT DE LUXE
Genuine
VIBROPLEX
"World's Finest Semi-Automatic Key"

This Patented JEWEL Movement De Luxe Vibroplex key places at your command a degree of sending performance which we believe is unsurpassable by any other make of key. Operators who have used it say it is the outstanding key value. If you get a kick out of performing a smart looking key that will out-delight with the brilliant sending, particularly chromium parts and base, colorful red switch knob, finger and thumb pieces, green silk cord and, above all, the "feather-touch" action of these JEWEL movement De Luxe Vibroplex keys.

832 Broadway
THE VIBROPLEX CO., Inc.
New York, N. Y.

Mail coupon for catalog of Vibroplex keys priced from \$9.95 to \$19.50

THE VIBROPLEX CO., Inc.
832 Broadway, New York, N. Y.
Please send me your New FREE Catalog of Vibroplex keys.

Name.....
Address.....
City..... State.....

THE VIBROPLEX CO., Inc.
832 Broadway, New York, N. Y.
Please send me your New FREE Catalog of Vibroplex keys.

Name.....
Address.....
City..... State.....

55. Ad for the De Luxe Lightning Bug. QST, December 1940.

Another change in 1941 was that sometime between April and November the company packed up and moved across the street to 833 Broadway. Whether this move had anything to do with the impending war is not known.

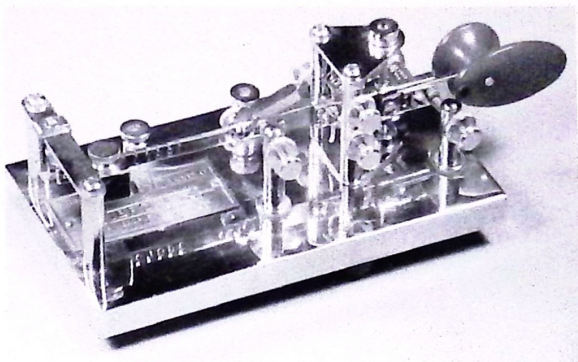
The U. S. entered World War II on December 7, 1941, but Vibroplex seems to have enlisted even sooner. The key in Figure 57 is a military J-36 speed key manufactured by Vibroplex on June 6, 1941, about the same time they were moving. This particular key has the 796 Fulton Street address on it, but later keys have the 833 Broadway address so presumably the company abandoned the Brooklyn plant and combined their sales and manufacturing operations in Manhattan soon after this latest move.

Unconfirmed stories have it that Vibroplex was swamped with government orders at the beginning of the U. S. involvement in the war. To catch up the backlog, the company reportedly lent a full set of patterns and jigs to the Lionel Corporation so Lionel could help them.

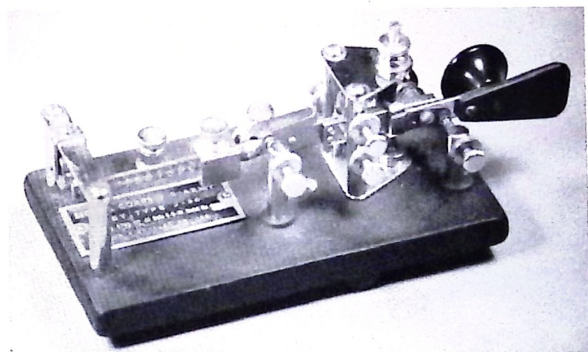
While this story cannot be documented, it makes sense. Lionel was a toymaker who, under wartime rationing, would

have been virtually shut down, but it had the machinery and trained workers to make a solid contribution to the war effort. The Lionel J-36 shown in Figure 58 is a pretty convincing argument in favor of the story. A careful side-by-side examination of the Lionel and Vibroplex J-36 keys shows that, with the exception of the labels and a minor difference in the knurling on screws, they are identical.

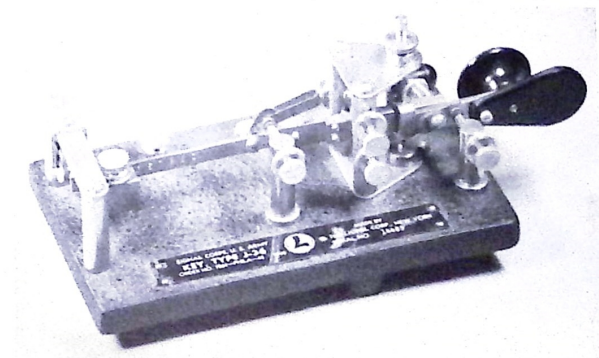
From 1943 to 1945 the De Luxe models were manufactured with a battleship grey base rather than chrome, to save chrome, which was a strategic material during the war. They retained their jeweled movement and red finger pieces and switch knob.



56. *Lightning Bug* in De Luxe finish, ca. 1940.



57. J-36 speed key made for the U. S. Army Signal Corps by Vibroplex, ca. 1941.



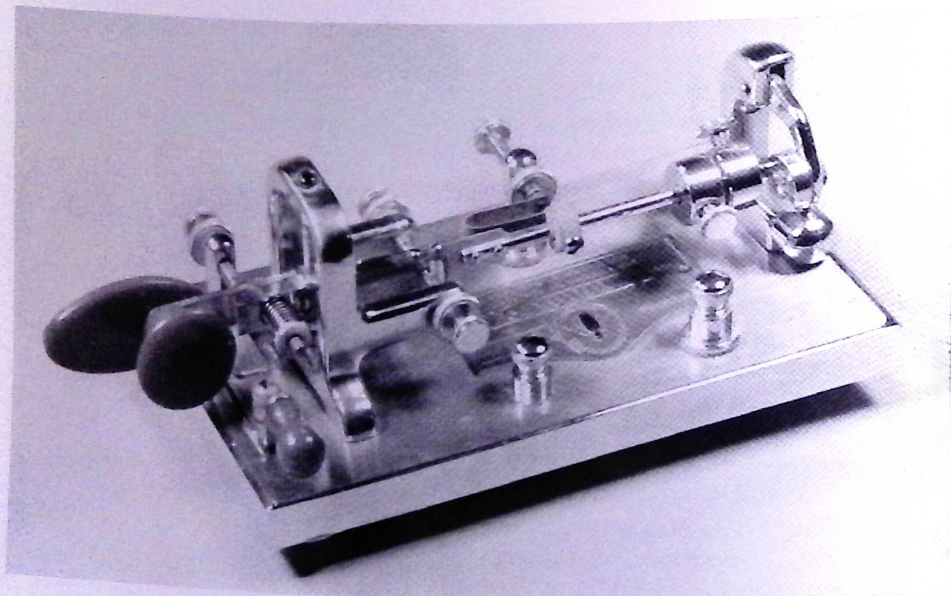
58. Lionel J-36, ca. 1942.

THE POST WAR YEARS

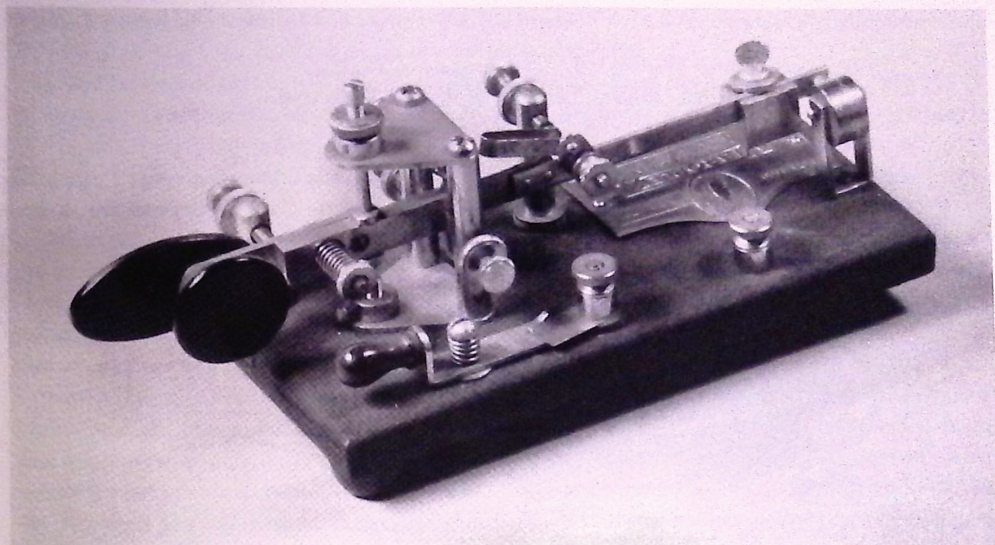
In 1911 J. E. Albright had taken a struggling inventor named Horace G. Martin under his wing. He promoted Martin's brainchild, a telegraphic transmitter, a.k.a. the wig-wag transmitter, bug, semi-automatic key, and just speed key. He snatched it from the ashes of the most spectacular stock failure in Wall Street history to that date. He elevated the Vibroplex name above the hints of scandal and fraud associated with the demise of A. O. Brown and the United Electric Company. He guided his company successfully through two world wars and a great depression, fighting off all competition, legitimate and illegitimate. He built a product of such high quality and with such a tradition of after-sales service that it became and remains to this day an industry standard. In 1947, after 36 years under the leadership of J.E. Albright, the presidency and general chairmanship passed into the hands of W. W. Albright.

W. W. Albright may not have had to face the challenges his brother did, but neither was he a do-nothing leader. With his guidance and the design ability of La Hiff, Vibroplex introduced two or possibly three new products during the next dozen years.

In the latter half of 1948, the company introduced its "New 1948 Super De Luxe Vibroplex." This new key, also called the Presentation (Fig. 59) was really a Vibroplex Original in full party dress. With its gold-



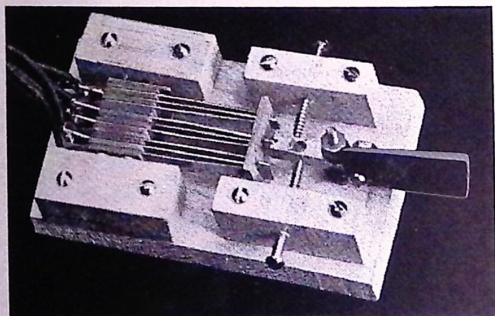
59. Presentation, ca. 1948. Still in production.



60. Zephyr, ca. 1940–1958.

plated base top plate, all chrome parts, and bright red plastic finger and trim pieces, the Presentation was undoubtedly the most luxurious key the company had ever produced. The Presentation is still in production.

The next offering was at the opposite end of the line. *The Railroad Telegrapher*, November 1948, includes the first ad found for the Zephyr (Fig. 60). A Zephyr has been seen with a 796 Fulton Street label,



This "key" can be made from a jack-switch in a few minutes, eliminates the need for two relays in the electronic key.

61. Keyer paddle made from a jack switch.
QST, April 1940, page 13.



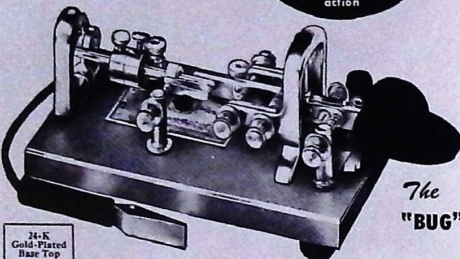
62. First commercially-produced electronic keyer. Lovett Garceau Electro-Medical Laboratory, ca. 1942.

Never fires the arm . . . never upsets the nerves SENDING MADE EASIER FOR EVERYBODY

World's No. 1 Key

VIBROPLEX

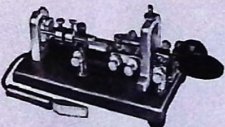
Semi-automatic
action



24-K
Gold-Plated
Blue Top

Vibroplex Super DeLuxe

Fast operation and easy action make this newest Vibroplex a popular choice among the elite. Equipped with the world's easiest sending features, in addition to all former Vibroplex features, it has a super deluxe speed control mechanism that provides greater speed range and allows sending without extra variable. Precision machined, trouble-proof and adaptable to any desired speed. A beautiful key, built to give a lifetime of sending enjoyment. Everybody wants one. With circuit closer. Del. inv. only \$29.95.*



Vibroplex Original

Here's a key you can buy with confidence. In daily use for over 40 years has pleased thousands with its ease of operation, strong, clean signal and all-around sending experience. "Sure easy on the arm." Trouble-proof, adaptable to any speed. Many of these keys will be service after 40 years' use. With circuit closer, Standard \$19.95; Del. inv. \$21.95.*

Vibroplex Blue Racer

Small, compact, rugged built extra sturdy like the Original, but only half the size. 2 lbs. 8 oz. Over 400 small spaces. Precision machined, adaptable to any desired speed. Has the same features as the Original and very popular with thousands of users for its sending performance with the best of ease. With circuit closer, Standard \$19.95; Del. inv. \$21.95.*

Vibroplex Carrying Case

Black simulated morocco. Cloth lined. Reinforced corners. Flexible leather handle. Keeps key free of dirt, dust and moisture, and keeps safe when not in use. With lock and key. \$4.75.

Avoid imitations!
The "BUG" Trade Mark
Identifies the
Genuine Vibroplex.
Accept no substitutes



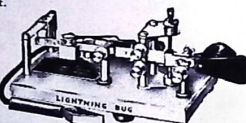
The
"BUG"

Standard Models have: Gray base, chrome top parts. Deluxe Models have: Polished chromium base and top parts, red trim and jewel movement.

All Vibroplex models available for left hand operation. All Vibroplex keys, equipped with 3/16" contacts.

Vibroplex Lightning Bug

Beautifully styled, precision machine. Rugged, self-improving frame, a flat pendulum bar with slotted contacts that can't work loose. A bridged damper frame prevents damage to key, an in-circuit, adjustable dot contact spring that may be removed without disturbing the speed switches. A great key at this low, low price. With circuit closer, Standard \$19.95; Del. inv. \$21.95.*



"VIBRO-KEYER"

The Vibro-Keyer supplies the answer to the demand for Vibroplex parts for the construction of electronic transmitting units. Its beautiful beige-colored base is 3 1/2" by 4 1/2" and weighs 2 1/2 pounds. It uses the Deluxe Vibroplex contacts, main frame and super finished parts. Colorful red finger and thumb pieces. Has the same smooth and easy operating Vibroplex transmission lever, adjustable to your own taste. Travel at \$15.95.

* Cord and wedge, \$1.75 additional

NEW SPECIAL ENLARGED Edition of PHILLIPS CODE, \$2.75 Postpaid

Also includes:
Radio Code Signals
International Morse
American Morse
Russian, Greek, Arabic
Turkish and Japanese
Morse Codes
World Time Chart

United States Time Chart
Commercial "Q" Code
Aeronautical "Q" Code
Miscellaneous Abbreviations, Used on international wire, submarine cable and radio telegraph circuits.

Get your copy today!



You must be tired of the old-fashioned keys and their annoyances; or maybe your lug is old and not perking as you'd like, then why not hitch on to a new Vibroplex and enjoy your operating as never before. Choose yours from those illustrated here. You can be sure it's a Vibroplex.

Prices subject to change without notice

THE VIBROPLEX CO., INC., 833 Broadway, New York 3, N. Y.

W. W. ALBRIGHT, President

IF YOU SEND YOU SHOULD USE THE VIBROPLEX

90

so it may have been introduced as early as 1940. The Zephyr is just a Champion on a ½ inch narrower base and with a shorting lever. It ended production about October 1958.

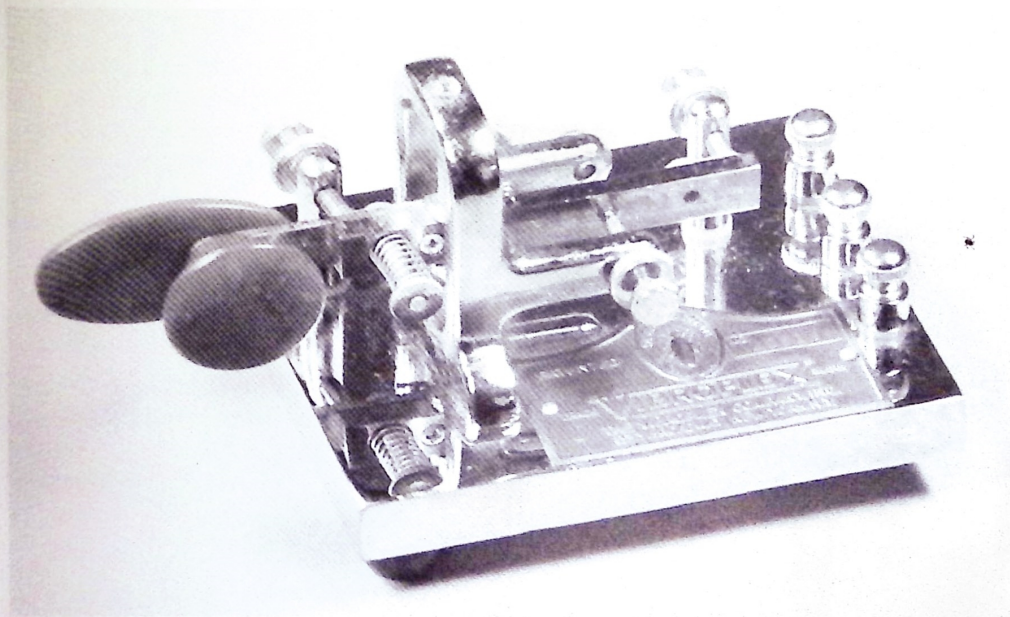
In 1958 the Standard model's base color was changed from black crackle to grey crackle finish.

Harry Beecher introduced the first fully automatic electronic keyer in his April 1940 *QST* article, "Electronic Keying." Operating this device required a new type of mechanical key. Beecher recommended: "The switching arrangement is an ordinary bug with the bar connecting the dash and dot terminals removed and the proper wires installed. The dot contact is, of course, rendered non-vibrating."

Alas, many a good bug was hacked to death in the guise of making electronic keyer paddles. Beecher also showed a method for making a keyer paddle (Fig. 43) using a jack-switch.

Figure 62 shows a prototype keyer manufactured by the Lovett Garceau Electro-Medical Laboratory of Holliston, Massachusetts, from a patent granted to Lovett Garceau on December 1, 1942. This keyer also makes use of the jack-switch for a keyer paddle.

After the end of World War II, electronic keyers began to be manufactured in large numbers for both the amateur and commercial radio operators. Neither mutilated bugs nor jack-switches proved to be the ideal solution for actuating these keyers. Keyer paddles specifically designed for the new electronic keyers started appearing on the market. The 1960 *ARRL Handbook* introduced Vibroplex's entry into this market (Fig. 63), the Vibro-Keyer, with a beige crackle finish. In 1962 it was made available in De Luxe finish with a chrome base (Fig. 64). The Vibro-Keyer is still in production.



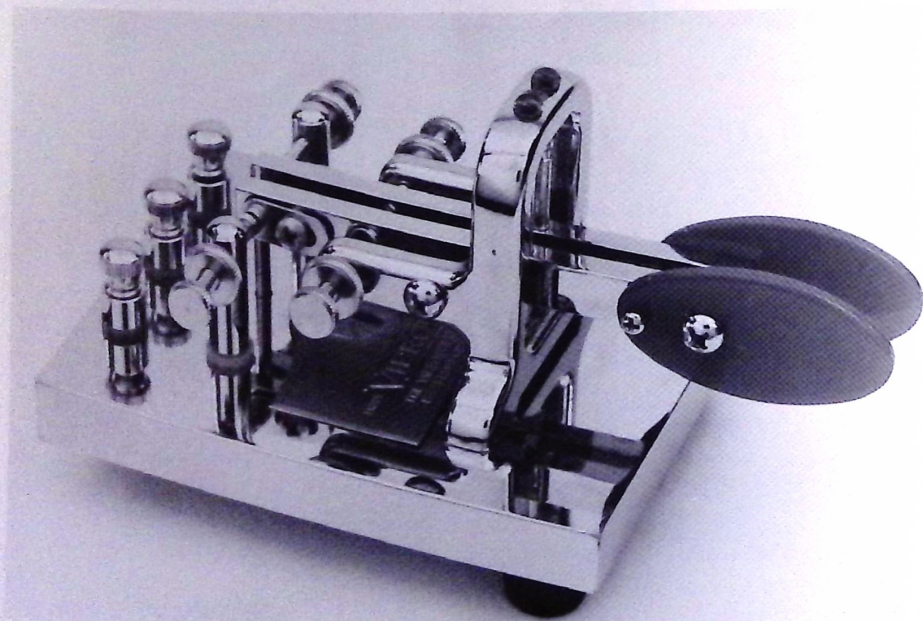
64. Vibroplex Vibro-Keyer in De Luxe finish, ca. 1962.

END OF AN ERA, BEGINNING OF A NEW DAY

The 1962 *ARRL Handbook* carries the last ad found for the Blue Racer. It's possible that it was carried for a few more years, promoted only in company brochures, but it's likely the old No. 4 was dropped from the line soon after the last ad was run.

The loss of the Blue Racer from the product line was small potatoes compared with what was to come. In 1965, after 53 years of care and nurturing by the Albrights, Vibroplex passed out of the family's control. John A. La Hiff, an old company hand and probable designer of the No. 6 (Lightning Bug), Champion, Zephyr, and Presentation models, bought the company. La Hiff ran the company from 833 Broadway, with no significant additions or deletions until his death in the early 1970s. His son, Vincent "Vinnie" La Hiff, inherited and ran the company.

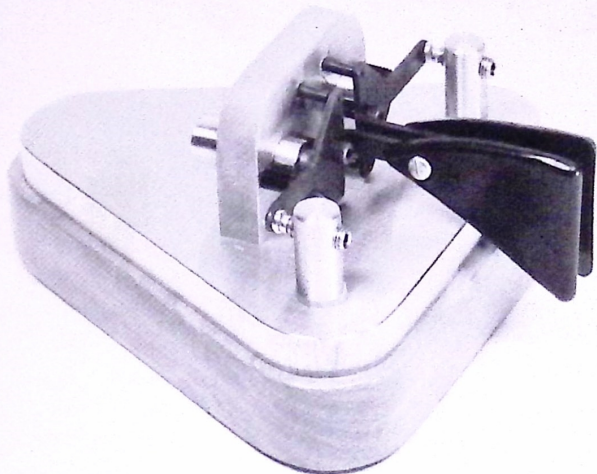
In 1978, Peter Garsoe bought Vibroplex from Vinnie La Hiff, packed up all the machinery, stock, and the meager records, and moved the whole lot to Portland, Maine, where he had several other business interests including a small hand tool manufacturing company. The tool company used similar technology to the Vibroplex keys, and Garsoe, rightfully as it turned out, assumed that the two companies would be able to



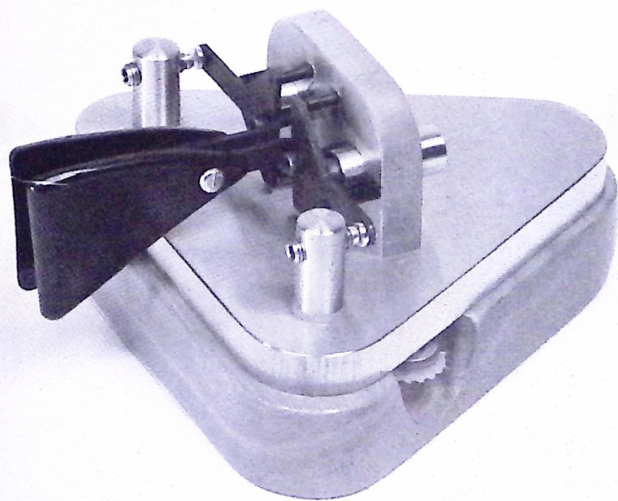
65. Vibroplex Iambic, ca. 1979. Photo from Vibroplex Company.

share facilities and operating personnel at a savings in costs to both.

Garsoe had all the old machinery refurbished and old dies rebuilt or replaced. He then streamlined the product line to meet current market conditions. The Lightning Bug and Champion were dropped, and a new iambic keyer paddle similar in style to the Vibro Keyer was added and named simply the iambic (Fig. 65). Two completely new units were bought from Hamco, a West Coast company, and added to the line. The Brass Racer iambic (Fig. 66) is an iambic keyer paddle made of polished brass parts mounted on a polished brass triangular base which in turn is mounted on a nicely finished hardwood base. The Brass Racer EK-1 (Fig. 67) is identical to the Brass Racer iambic with the addition of a Curtis 8044 electronic keyer chip mounted in the base, making the Brass Racer EK-1 a compact, fully self-contained electronic keyer. The Vibroplex Original in the Standard, De Luxe, and Presentation models continues to be produced.



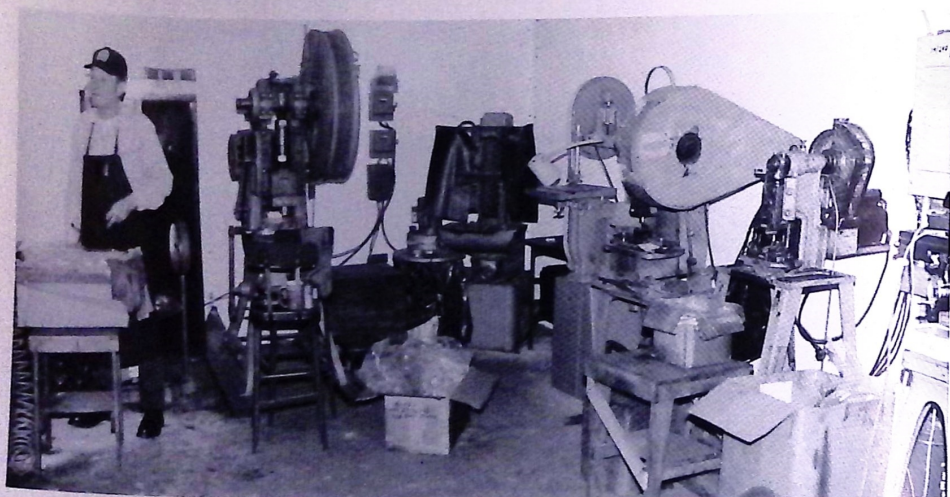
66. Vibroplex Brass Racer iambic, ca. 1982. Photo from Vibroplex Company.



67. Vibroplex Brass Racer EK-1, ca. 1982. Photo from Vibroplex Company.



*The Vibroplex Crew, February 14, 1990.
Back row, left to right: Barbara Pike, Joan Hunter, Ed Felt, Ed Williamson.
Front row, left to right: Janice Leighton, Jean Wong, Peter Garsoe.*



The shop at Vibroplex: Ed Felt with some of the machines used to build Vibroplex keys.

15

DEBUNKING MYTHS AND OTHER ODDS AND ENDS

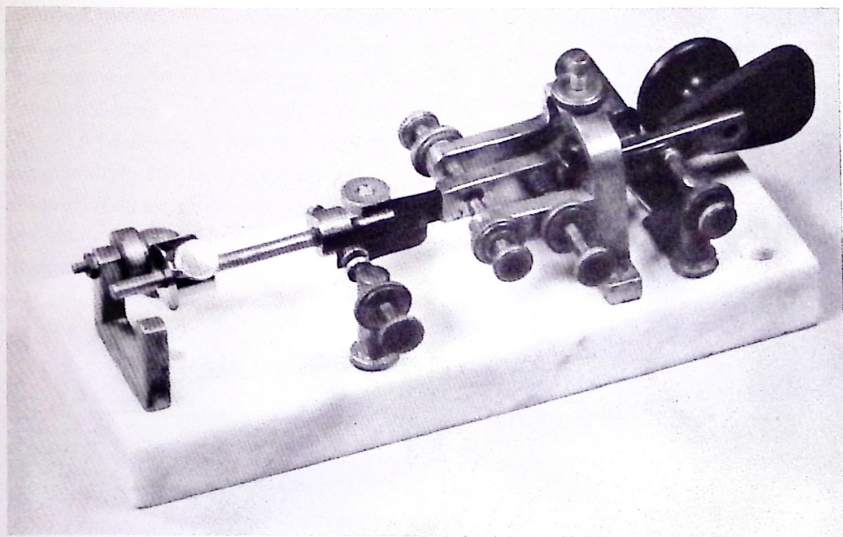
Among collectors and historians of any item or era, stories will arise about these objects for which no documentation can be found but which everyone swears must be true because everyone has heard the story. There are at least two such stories about Vibroplex that need to be addressed.

Figure 68 shows a marble-based key with a set of early Blue Racer works on it. There is no label nor any sign there ever was one. The bottom of the base (Fig. 69) shows very professional workmanship, with arrow-straight grooves of equal depth and uniformly countersunk holes. It also reveals that the circuit closing lever is not connected to one of the binding posts as it should be. Louise Moreau has a marble-based key that was given to her by the original owner. He said he was in New York City in the 1920s and had the key specially made by Vibroplex. Again, this key did not have a label.

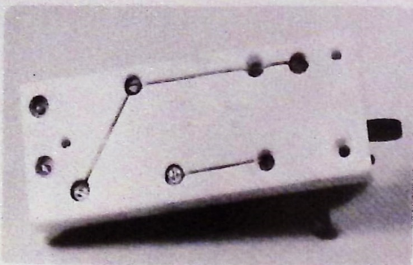
The question is: did Vibroplex produce any marble-based keys?

One may presume that if he were to go to any small manufacturer and plunk down a signed blank check, he could probably walk out with that company's widget on a marble base, gold plated, or otherwise modified to his specification. Given this circumstance, it's possible that Vibroplex did produce a few keys on marble bases.

With J. E. Albright's obvious pride in his company and his fierce defense of its trademarks, however, it does seem odd that no marble-based speed key has yet surfaced bearing a genuine Vibroplex label. Neither



68. Marble-based key with Blue Racer works, ca. 1920.



69. Bottom of Figure 68.

The story runs counter to the known facts. First, Martin couldn't have sold the patent because he'd already assigned it to Albright who in turn had assigned it to Vibroplex, Inc. Even if Albright didn't think the Autoplex was any longer a marketable commodity, he would not have sold it to a competitor if there was even the slightest chance the competitor could successfully market it.

From Bunnell's point of view, it made even less sense. The Autoplex was old technology that had been soundly whipped and thrust out of the marketplace by the new lighter, simpler, and cheaper all-mechanical transmitters produced by Vibroplex and a host of illegal competitors.

The Autoplex was patented early in 1902. If Bunnell really wanted to produce it, why pay for the rights when in two or three years the 17-year patent would run out and they could have it for free?

The clincher is this plate (Fig. 70) from Volume 8 of the textbook *Hawkins Electrical Guide with Questions Answers and Illustrations*, 2nd edition, copyright 1917. The caption under the line drawing begins: "Fig. 3,077.—Bunnell autoplex or semi-automatic transmitter," but a close examination of the maker's label on the drawing (Fig. 71) reveals that this is indeed a Martin Autoplex manufactured by the United Electrical Manufacturing Company. It's more than probable that this caption was an error that made it to press. As the *Hawkins Guide* is quite common in today's flea markets and most radio and key collectors seem to have a copy, it's not hard to understand how the story got started.

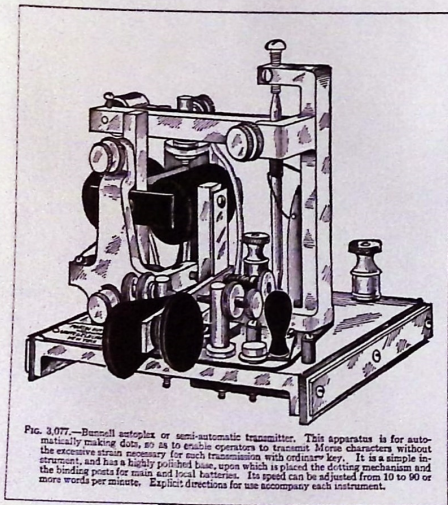


FIG. 3,077.—Bunnell autoplex or semi-automatic transmitter. This apparatus is for automatically making dots, so as to enable operators to transmit Morse characters without the excessive strain necessary for each transmission with ordinary key. It is a simple instrument, and has a highly polished base, upon which is placed the detour mechanism and the binding posts for main and local batteries. Its speed can be adjusted from 10 to 90 or more words per minute. Explicit directions for use accompany each instrument.

70. Illustration. Hawkins Electrical Guide, copyright 1917.



71. Detail, Figure 70.

A true story about Vibroplex that seems to be little known is that in the 1924-1925 period Vibroplex advertised and marketed a line of radios under the name Martinola. Figure 72 shows an ad run in the December 1924 *The Railroad Telegrapher* introducing the Martinola 5. *Radio Industry* in May 1925 indicates that Vibroplex had 3 models in production, the Martinolas 1, 4, and 5. These were 1, 4, and 5 tube models and they were all TRF type sets, according to the *Radio Industry* listing. It's doubtful that Vibroplex produced these sets themselves. At that time small job shops abounded in New York that would make up any set you wanted and put on your label.

In any event, production must have been quite limited. Only one Martinola is known today, a Model No. 1 with a matching two-tube amplifier (Fig. 73). The two-tube amplifier is not mentioned in either of the two known ads for Martinolas, but its label and case style match the tuner perfectly.

On December 8, 1950, Vibroplex bought the publication *The Phillips Code* from *Telegraph and Telephone Age*. *The Phillips Code* was a lengthy list of standardized abbreviations not only for words but for entire phrases. It enabled commercial telegraphers to substantially reduce the amount of circuit time required to handle long messages. Vibroplex had been a distributor of *The Phillips Code* for years and continued to advertise it in the usual magazines for some time thereafter. (The Phillips of *The Phillips Code* was Walter P. Phillips who was on the board of directors of the ill-fated United Electrical Manufacturing Company. He was believed to have been a personal friend of Horace Martin as well as a financial backer.)

A key recently discovered by Fred Linn, a Mid-West collector, offers a clue to Horace Martin's activities between the end of 1908 when U.E.M. folded and 1911 when he reappeared in New York City. The key is remarkably similar to the 1911 double lever model (see Fig. 17). There are small differences in the shapes of the circuit closing levers and the dash lever pivot

MARTIN'S LATEST MODEL

MARTINOLA



A five-tube radio frequency set, STABILIZED so the peak of amplification is obtained on weak and strong broadcasting.

LIBERAL TIME PAYMENTS AMAZING VALUE AT \$85

Perfected and manufactured by Horace G. Martin, famous inventor of the VIBROPLEX. You simply cannot go wrong on a MARTINOLA.

**YOU CAN'T BUY A BETTER
RADIO RECEIVER, NO MATTER
HOW MUCH YOU PAY**

It is the best set on the market today, regardless of price. It has the sweetest and clearest tone you have ever heard, on local or long distance receiving, no distortion whatever. It is easy to operate. None but the best of workmanship and the finest of materials used throughout.

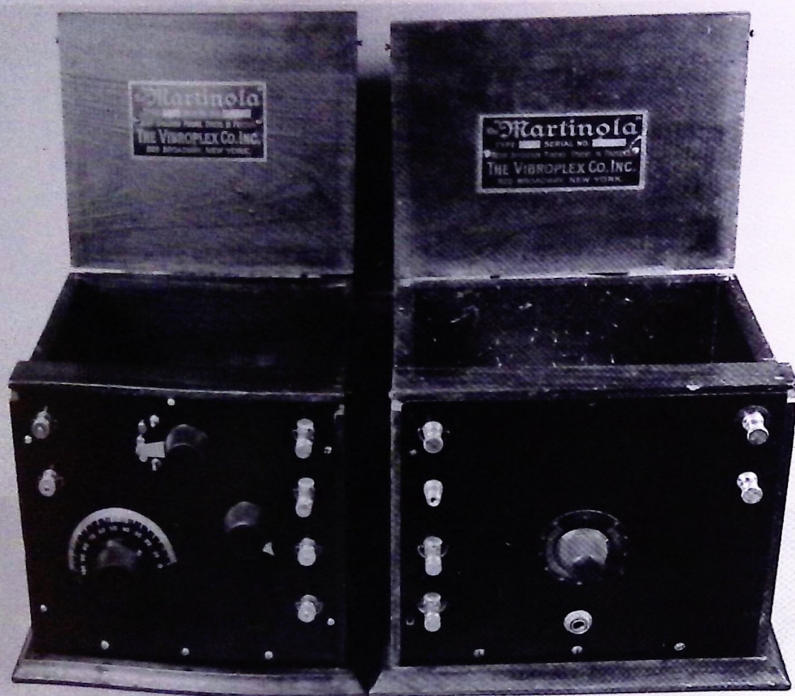
Don't be "bunked" by cheap sets making "coast to coast" claims.

**WRITE US TODAY FOR OUR
SPECIAL LIBERAL TIME PAYMENT
TERMS TO O. R. T. MEMBERS** and our folder illustrating all types of MARTINOLAS and radio equipment of all kinds.

THE VIBROPLEX CO. Inc.,
825 BROADWAY, NEW YORK

PHONES: Stuyvesant 4829, 4829, 6094

J. E. ALBRIGHT, President, Member O. R. T.,
Grand Div'n, Cert. 395



73. Martinola Type 1 one tube nonregenerative receiver and Type 2 two tube amplifier, ca. 1924–1925.

brackets, but these appear to be logical evolutionary changes. The significant item is the label which reads, "The Vibroplex Martin Manufacturing Co., Atlanta, Ga."

It would seem that Martin attempted to start a new company on his own in Atlanta in 1909–1910. Until more research can be done and corroborative evidence found, the possibility must also be entertained that this key could be another product of the patent infringers. For that reason, it has not been listed in the official list of Vibroplex models in Chapter 16.

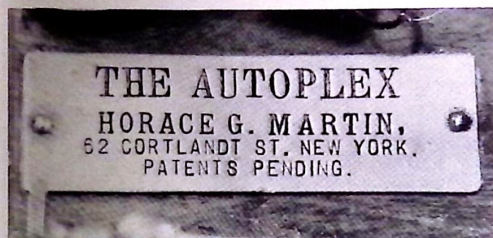
Finally, a number of collectors and historians have questioned Vibroplex's claim to being one hundred years old in 1990. The Vibroplex key was first produced in 1904, and the Vibroplex Company, Inc. was incorporated in 1915, but Peter Garsoe, current owner of Vibroplex, points out that Vibroplex's success, indeed its very survival, is due primarily to J. E. Albright.

Albright started a typewriter sales company in 1890 which catered to the telegraph trade. In 1911 Albright began acquiring the rights to a line of telegraph keys, and in 1915 he incorporated the company with a new name—Vibroplex Company, Inc. The renamed company continued to sell and service typewriters at least into the 1920s. While the Vibroplex name is not one hundred years old, it seems a fair claim that the company that today bears the name Vibroplex celebrated its hundredth birthday in 1990.

16

DATING VIBROPLEX KEYS

This chapter is designed to be a guide in dating the Vibroplex key and is divided into two parts. The first part is close-up photographs of each style of label and the dates of its use. The second part is a chart listing each model of Vibroplex with its dates of manufacture. The Figure column in this chart refers to the figure(s) in the book that picture this model of key.



74. 1902-1903 (Autoplex—early).



75. 1904-1905 (Autoplex—late).



76. 1904-1907 (first Vibroplex).



77. 1907-1908 (Norcross label).



78. 1911-1915 (Horace G. Martin label).



79. 1915-1917 (first Vibroplex Co. Inc. label).

MODELS AND DATES

<i>Model</i>	<i>Mfg. dates</i>	<i>Figure</i>	<i>Comments</i>
Autoplex (early)	1902-1903	7	Wooden base
Autoplex (late)	1903-1905	8, 9, 70, 71	
Vibroplex	1904-present	10, 11	Became the Original in 1940. Base 3½" x 6¾"
Norcross models	1907-1908	12, 15	Standard thick base; Standard thin base; Double lever thin base
Double lever	1911-1926	17	Post Norcross model
X Model	1912-1922	18, 19	a.k.a. Single Point; Direct Point Transmitter
No. 4	1914-1962	31, 32	Named Blue Racer by 1920. May have been out of production 1932-1941.
Upright	1916-1919	33, 34	Wirechief's model; Vertical
Midget	1918-1920	35	
Martinola	1924-1925	73	Radio models 1, 2, 4, 5
No. 6	1927-1982	41, 55, 56	Lightning Bug
Martin Junior	1934-1939	42, 43	a.k.a. Junior; Vibroplex Junior. ½" shorter and narrower than standard model
Champion	1939-1982	53, 54	
Zephyr	1940-1958	60	Champion with ½" narrower base
J-36	1941-1944	57	Possibly produced postwar
Lionel J-36	1942-1944	58	
Presentation	1948-present	59	Original with gold-plated top on chrome base
Vibro-Keyer	1960-present	63, 64	Paddle for electronic keyers
Iambic	1979-present	65	Improved paddle
Brass Racer	1982-present	66	New style iambic electronic keyer paddle
Brass Racer EK-1	1982-present	67	Iambic paddle with built-in electronic keyer

APPENDIX

This appendix contains the drawings for all fourteen patents that have been owned by Vibroplex. The texts for the four most significant patents are also included: the Martin Autoplex (732,648), the Coffe patent (812,183), the first Martin mechanical key patent (767,303), and the Martin Model X (1,043,449).

The Autoplex was the first successful semi-automatic key. The Coffe patent is significant, of course, because it prevailed in court over Martin's 1904 patent. Later, when Albright came on the scene and gained control of the Coffe patent, that was the only patent for which he prosecuted the infringers, even though his ads continued to proclaim Martin as the originator of the semi-automatic telegraph transmitter.

The Martin 1907 patent (842,154), while it shows in detail the plans for the Vibroplex key which was actually built and marketed, is in reality only a distillation of the ideas first presented in the Martin 1904 patent.

Except for the Autoplex, all of the Martin, Boulter, and La Hiff patents, which depend on a vibrating arm to produce dots, can only be considered improvements of the basic invention, the credit for which goes to Coffe.

The first Martin 1912 patent (1,042,457) appears to be an interim step en route to the Model X. The Model X used one set of contacts to make both dots and dashes. It worked well and appears to have been moderately successful for a number of years. To date, no machine based directly on patent 1,042,457 has been found.

The five Boulter patents appear to have been purchased primarily to protect existing Vibroplex products. There is no documentation to prove it, but buying the patents was probably cheaper than going to court. The first two Boulter patents (1,074,831 and 1,109,818) are double lever machines. Since Martin hadn't bothered to patent the double lever, Albright, who was in charge by this time, must have thought it prudent to buy these patents.

Why the remaining Boulter patents were purchased is not known. Albright may have simply bought them as insurance against competition or may have seen genuine merit in the designs. A Vibroplex board of directors meeting on September 19, 1919, mentions plans to build a Boulter-type sending machine. No such machine has ever been found or documented, however.

PATENTS OWNED BY VIBROPLEX

<i>Patent No.</i>	<i>Filing Date</i>	<i>Issue Date</i>	<i>Inventor</i>
732,648	Oct. 6, 1902	June 30, 1903	Horace G. Martin
767,303	May 7, 1904	Aug. 9, 1904	Horace G. Martin
812,183	Jan. 11, 1904	Feb. 13, 1906	William O. Coffe
842,154	Apr. 16, 1906	Jan. 22, 1907	Horace G. Martin
1,042,457	July 1, 1911	Oct. 29, 1912	Horace G. Martin
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2,187,351	Jan. 9, 1939	Jan. 16, 1940	John A. La Hiff

No. 732,648.

PATENTED JUNE 30, 1903.

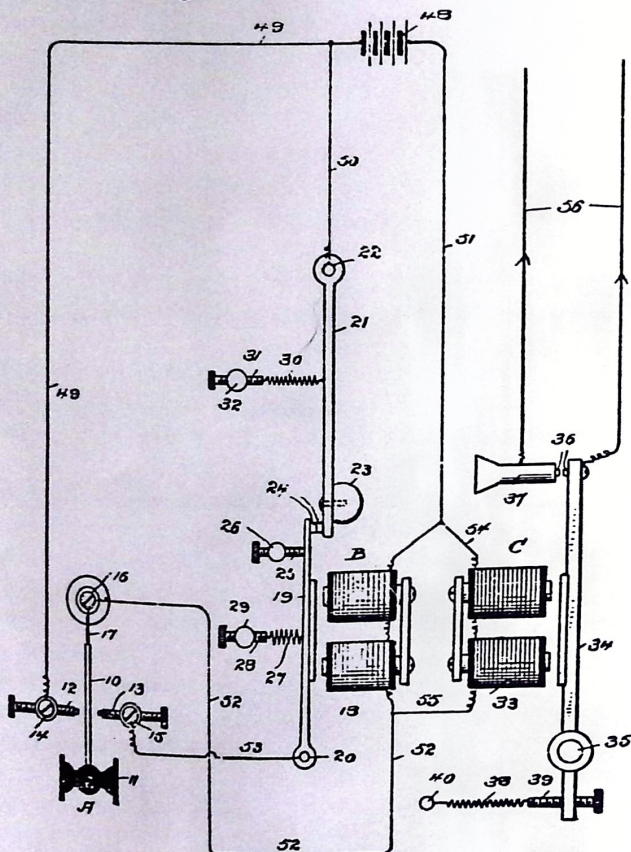
H. G. MARTIN.
TELEGRAPHIC TRANSMITTER.

APPLICATION FILED OCT. 6, 1902.

NO MODEL.

3 SHEETS—SHEET 1

Fig. 1.



WITNESSES.

H. A. Lumber
S. W. Atherton.

INVENTOR.

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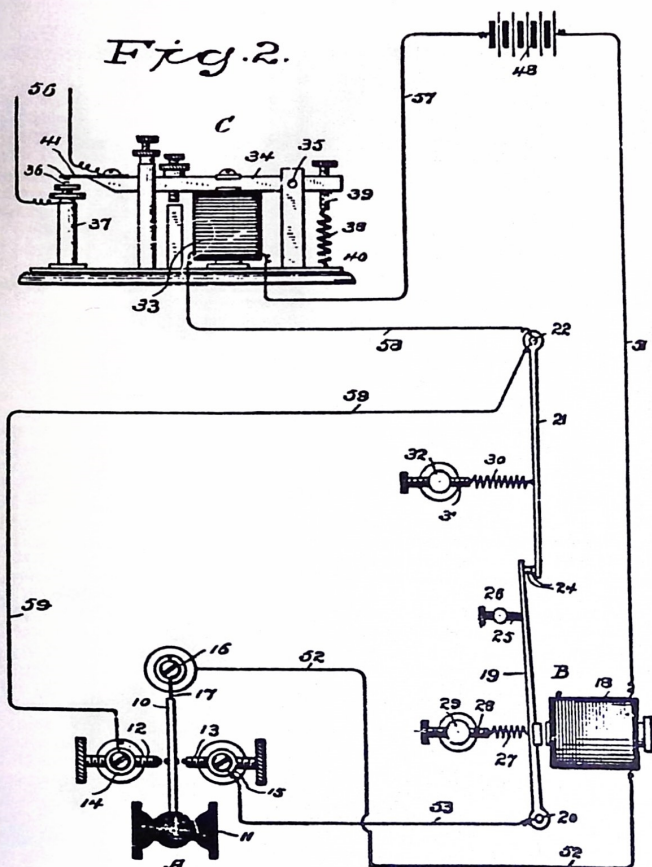
No. 732,648.

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H. G. MARTIN.
TELEGRAPHIC TRANSMITTER.
APPLICATION FILED OCT. 6, 1902.

NO MODEL.

3 SHEETS-SHEET 1.



WITNESSES.

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No. 732,648.

PATENTED JUNE 30, 1903.

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TELEGRAPHIC TRANSMITTER.
APPLICATION FILED OCT. 7, 1902.

NO MODEL.

3 SHEETS—SHEET 2.

Fig. 3.

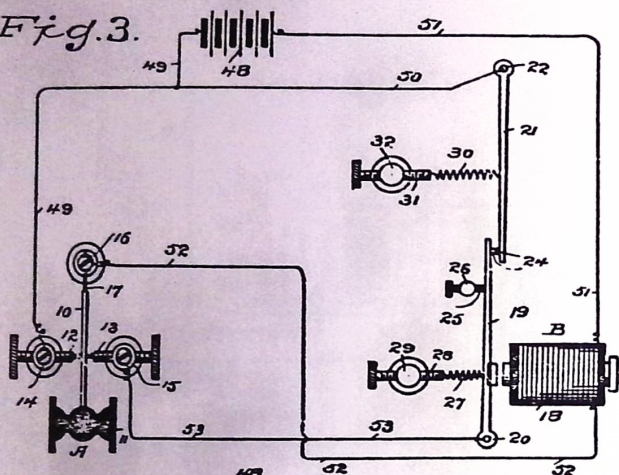
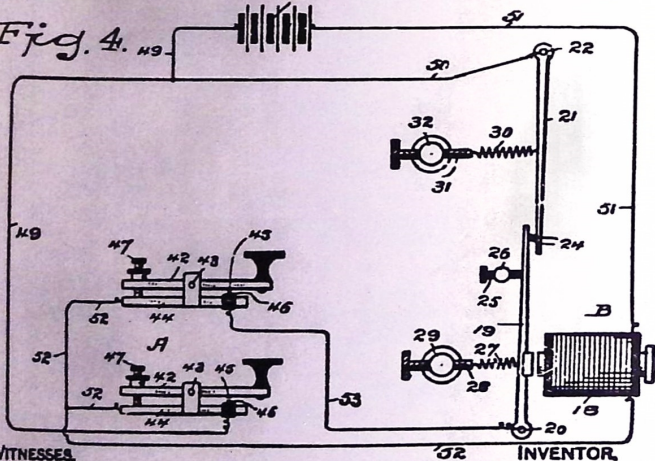


Fig. 4.



WITNESSES.

H. A. Lamb
S. W. Arthurton

INVENTOR.

Horace G. Martin
By A. M. Worcester
Att.

UNITED STATES PATENT OFFICE.

HORACE G. MARTIN, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF
TO WALTER P. PHILLIPS, OF BRIDGEPORT, CONNECTICUT.

TELEGRAPHIC TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 732,642, dated June 30, 1903.

Application filed October 6, 1902. Serial No. 128,055. (No model.)

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented a new and useful Telegraphic Transmitter, of which the following is a specification.

My invention relates to telegraphic transmitters, and has for its object, broadly, to provide an instrument of this character which shall retain all the merits of the Morse key, but shall be so constructed that it will make all dots automatically, leaving it in the power of the operator to adjust the length of the dots and leaving the spaces and dashes wholly at the control of the operator—that is to say, the operator may lengthen or shorten the dots, the spaces and dashes remaining at his control, or lengthen the spaces and dashes at will, the dots remaining constant. My invention, in other words, provides a simple and effective method of sending that wholly avoids the intense nervous strain of the Morse key and still retains its merits.

It is of course well understood that the letters of the Morse system consist of dots, spaces, and dashes. For example, the letter P consists of five dots, the letter C of two dots, a space and a dot, and the letter B consists of a dash followed by three dots. As an example of the expenditure of nerve force required of an operator by the Morse system it may be stated that the word "Mississippi" requires thirty-two depressions of the key and thirty-two relaxations of the pressure or upward movements. For each average word transmitted the operator must make twenty-four nerve exertions. An operator transmitting fifteen thousand words in eight hours, as many do, is compelled to depress the key one hundred and eighty thousand times and to release the key an equal number of times, making another one hundred and eighty thousand upward movements—that is, an average of three hundred and sixty thousand nerve exertions in eight hours. The result is that operators not infrequently completely lose control over the key, becoming victims of what is known as "telegrapher's paralysis."

It is, in fact, beyond dispute that the terrible nervous strain of moderately fast sending

with the Morse key leads to various derangements of the physical, mental, and nervous systems, and, furthermore, that when the power of the sender begins to fail the strain upon the receiver is very greatly increased.

The evils above mentioned have led to the adoption of various means for lessening the nervous strain upon the sender and for assisting operators in the incipient stages of telegrapher's paralysis, some of which have given more or less relief, but none of which have been able to get away from the fundamental principle of the Morse key with the exception of the keyboard system, the objections to which are too well known to require mention.

In practice good Morse senders emphasize their sending as a person does his words in talking. The condition of the wire necessitates the emphasis of certain letters or portions of letters at times, the operator relying upon the "feel" of the wire at the instant that a letter or portion of a letter is to be formed and also on the ability of the receiver. This emphasis is accomplished almost entirely by lengthening or shortening the dashes and spaces, the speed of the dots remaining constant. It is an important feature of my present invention that this perfect control of the instrument and power to emphasize his sending is retained by the operator, while at the same time any number of dots may be produced by a single nerve exertion. As there are all classes of operators, it has been found that better time can be made by sending in one way to one operator and in another way to others, the different styles of sending not depending so much upon the variation of the speed of sending as a whole as upon variations of certain impulses in making dashes and also the ability to vary the speed of words or portions of words. These and kindred features have been the stronghold of the Morse key and the cause of the practical failure of all automatic transmitters heretofore devised.

In order to enable operators to greatly increase their speed and with a less consumption of nerve force, and to enable operators to send at an ordinary rate of speed very much easier than has heretofore been possible, and to enable operators afflicted with telegrapher's

paralysis and who are practically unable to send with an ordinary Morse key to do good work, I have devised the novel telegraphic transmitter, of which the following description, in connection with the accompanying drawings, is a specification, reference characters being used to designate the several parts.

Figure 1 is a diagrammatic view illustrating a form of my invention which embodies a preferred form of key and also shows a repeating-sounder connected up in parallel with the electromagnet of the vibrator; Fig. 2, a similar view in which the repeating-sounder is connected up in series with the vibrator; Fig. 3, a view similar to Fig. 1, with the exception that the repeating-sounder is omitted; and Fig. 4 is a diagrammatic view illustrating a modified form of my invention in which I have shown two Morse keys connected up so as to comprise practically one key in lieu of the special form of key illustrated in Figs. 1, 2, and 3.

The essential features of my invention are a key, which I have indicated as a whole by A, a vibrator for making the dots, which I have indicated as a whole by B, and suitable electrical connections.

My preferred form of key consists of a lever 10, having a suitable finger-piece 11, which lies between adjustable contact-points 12 and 13, carried, respectively, by posts 14 and 15. Lever 10 is connected to a post 16 in such a manner as to permit it to be placed in engagement with either of the contact-points, but to normally retain it out of contact. In the present instance I have shown lever 10 as rigidly secured to a flat spring 17, which is itself rigidly secured to binding-plate 16. It is obvious, however, that the special details of construction may be varied to an almost unlimited extent without departing from the principle of the invention. The vibrator comprises an electromagnet 18, having an armature 19, pivoted as at 20, and a pendulum 21, pivoted as at 22. The pendulum may be provided with a weight 23, as in Fig. 1, or the weight may be omitted, if preferred, as in the other views. The armature and the pendulum may be provided with corresponding contact-points 24. The armature is shown as normally held in contact with an adjustable back-stop 25, carried by a post 26 by means of a retractile spring 27, one end of which is connected to the armature, the other to a screw 28, carried by a post 29, whereby the tension of the spring may be adjusted. The contact-point upon the pendulum is shown as normally held in engagement with the corresponding contact-point upon the armature by means of a retractile spring 30, one end of which is connected to the pendulum, the other to a screw 31, carried by a post 32, whereby the tension of the spring may be adjusted. It is of course immaterial so far as the principle of the invention is concerned whether the key-lever swings in the vertical or the horizontal plane. The essen-

tial feature is that the key-lever is adapted to be swung between two fixed contact-points and is arranged to normally stand about centrally between them, touching neither. The contacts may be arranged one above and the other below the lever, so that upon either raising or depressing the lever the circuit is closed, but are preferably placed upon the opposite sides of the lever, as shown in the drawings. The mode of connecting or hinging the lever or of retaining it normally in a central position or the shape or form of the lever or finger-piece are of little importance and do not enter into the spirit of the invention.

In use when the key-lever is swung to one side—in the present instance the right side—it completes the circuit, presently to be described, through the winding of the vibrator-electromagnet, which is thus energized and attracts the vibrator-armature. The armature when its movement is stopped by contact with the poles of the electromagnet kicks the pendulum out of contact with itself, thereby breaking the circuit, this action continuing automatically so long as the lever is held to that contact and sending dots into the line. If the key-lever is thrown to the other contact—in the present instance the left—the vibrator-electromagnet is energized as before, but the vibrator contact-points are shunted or short circuited. Therefore the circuit remains closed so long as the key-lever is held to that contact and a dash is sent into the line, as will be more fully explained.

In connection with my novel vibrator and key I may or may not use a repeating instrument, as a relay or a repeating-sounder, which I have indicated by C. In the present instance in Fig. 1 I have illustrated the use in connection with my novel vibrator and key of an ordinary form of repeating-sounder connected up in parallel with the coils of the vibrator-electromagnet, and in Fig. 2 I have illustrated the use in connection with my novel vibrator and key of a repeating-sounder connected up in series with the vibrator. In Fig. 1 the repeating-sounder comprises an electromagnet 33, an armature 34, pivoted, as at 35, and provided with a contact-point 36, adapted to engage a similar contact-point 36 on a post 37. The contact-points upon armature 34 and post 37 are normally held out of contact by a retractile spring 38, one end of which is connected to a screw 39, carried by the armature, and the other to a fixed point, as at 40. The repeating-sounder illustrated in Fig. 2 differs from the one in Fig. 1 in that it is connected up with the coils of the vibrator in series, and contact-point 36 upon the armature is carried by a spring 41.

In the form of my invention illustrated in Fig. 4, in lieu of the special form of key illustrated in Figs. 1, 2, and 3, I use two ordinary Morse keys connected up so as to comprise practically one key. When the circuit is closed by one of the levers, (the upper one

seen in the drawings,) it causes the vibrator-electromagnet to be energized without shunting the vibrator contact-points, thus sending dots into the line, as in the other form, and when the circuit is closed by the other lever (the lower one as seen in the drawings) it causes the vibrator-electromagnet to be energized, but short-circuits the vibrator contact-points, the circuit being held closed by this lever while sending a dash into the line. 42 denotes the levers of these keys pivoted, as at 43, to bases 44.

45 denotes contact-points on the levers, 46 insulated contact-points on the bases, and 47 denotes the usual stop-screws.

My novel vibrator, the key, and the repeating instrument, if used, are connected up as follows: 48 denotes a battery from one pole of which a wire 49 leads to contact-point 12, and a wire 50 from the same pole is connected to pendulum 21. A wire 51 from the other pole of the battery leads to vibrator-electromagnet 18. A wire 52 leads from the vibrator-electromagnet to lever 10, and a wire 53 leads from armature 19 to contact-point 13.

The connections in the modified form illustrated in Fig. 4 differ from those in the other views only in that the wire 52, which in Figs. 1, 2, and 3 leads to the lever 10, in this form branches and leads to the bases 44.

Where a repeating instrument is used and connected up in parallel with the electromagnet of the vibrator, as in Fig. 1, a wire 54 leads from wire 51 to the electromagnet 33 of the repeating instrument, and a wire 55 leads from electromagnet 33 to lever 10 by way of wire 52.

56 denotes main-line wires leading from the repeating instrument.

Where a repeating instrument is used and connected up in series with the electromagnet of the vibrator, as in Fig. 2, a wire 51 leads from one pole of the battery to the electromagnet 18 of the vibrator. A wire 52 leads from electromagnet 18 to lever 10, and a wire 53 leads from armature 19 to contact-point 13, as in the other form. A wire 57 leads from the other pole of the battery to the electromagnet 33 of the repeating instrument, a wire 58 leads from electromagnet 33 to pendulum 21, and a wire 59 leads from wire 53 to contact-point 12.

The use of my novel telegraphic transmitter is as follows: Suppose, for example, that it was desired to make the letter "H," which is composed of a dash and three dots. The key-lever would be thrown to the left or dash side and held there for the proper length of time and then swung across to the right or dot side and held there until the vibrator produced three dots. In practice the operator depends upon the ear to tell when the proper number of dots has been produced. This can be done with great exactness, even by a novice. The speed of the dots and their length may be changed by varying the tension of pendulum retractile spring 20 and armature

retractile spring 27 and by adjusting the armature back-stop 25. Varying either of these three adjustments causes the pendulum to be kicked out more or less in accordance with the adjustment. When the key-lever is thrown to the dot side—that is, to contact-point 13—the circuit is closed and the vibrator opens and closes the circuit automatically thereafter, each of these automatic impulses sending a dot into the line. The space between the dots can be lengthened by lightening the tension of the retractile spring, causing the pendulum to be kicked farther away by the armature-lever. It is thus left wholly in the power of the operator by manipulation of the adjustments described above to lengthen, shorten, or quicken both the dots and the spaces.

It is of course obvious that a vibrator to produce successful telegraphic dots must follow the action of the key practically instantaneously. This I accomplish perfectly with my novel construction. I have found it impossible, however, to produce the desired result with vibrators constructed on the plan of a vibrating bell or buzzer with the armature weighted or damped to secure reduction of speed. Vibrators constructed on the buzzer plan do not get into action quickly enough, and when they do it is with a varying rate of speed, the first of a series of dots, as in the letter "P," being relatively slow and the last part of the series fast.

In the form illustrated in Fig. 1, in which a preferred form of key is used and a repeating-instrument electromagnet is shown as connected up in parallel with the vibrator-electromagnet, when key-lever 10 is moved toward the right—that is, is thrown to contact-point 13—the current passes from the positive pole of the battery over wire 51 to the electromagnets of both the vibrator and the repeating instrument, a portion of the current passing through electromagnet 18 of the vibrator and a portion passing through electromagnet 33 of the repeating instrument and uniting again at wire 52, then passing through key-lever 10 and contact-screw 13 to wire 53 and through armature 19, pendulum 21, and wire 50 to the negative pole of the battery. The action of the current is to magnetize the electromagnets of both the vibrator and the repeating instrument, causing their respective armatures 19 and 34 to be attracted. Armature 34 of the repeating instrument on being drawn down closes contacts 36, leading to the main line or other foreign circuit, as wires 56, and sends an impulse into said circuit, the length of the impulse varying in accordance with the adjustment of the vibrator mechanism. The vibrator-electromagnet, being energized by a portion of the same current that caused the attraction of armature 34 of the repeating instrument, therefore attracts its own armature 19, which carries pendulum 21 with it at a speed depending upon the tension of armature retractile spring 27 and the

pendulum retractile spring 30. When armature 19 strikes the poles of electromagnet 18, which in this case act as a dead stop therefor, the pendulum being unimpeded by anything except its retractile spring and having gained a certain momentum does not cease its forward movement instantly, but continues the forward movement until its momentum is overcome by retractile spring 30, thus breaking the vibrator-circuit through the pendulum and wire 50 to the battery. At the instant vibrator-armature 19 touches the poles of electromagnet 18, the circuit being broken between contact-points 24 at the ends of armature 19 and the pendulum, the electromagnets of the vibrator and of the repeating instrument are both demagnetized, armature 34 of the repeating instrument is moved away from the poles of electromagnet 33 by retractile spring 38, thereby breaking the main-line circuit, and the vibrator-armature 19 is moved away from the poles of electromagnet 18 by retractile spring 27 until said armature reaches back-stop 25, where it remains until the pendulum more leisurely returns to contact with the vibrator-armature, thereby closing the vibrator-circuit again, whereupon both electromagnets are again energized. This action continues automatically so long as key-lever 10 is held toward the right—that is, in engagement with contact-point 13, to which wire 53 is connected—each automatic impulse causing a kick of the pendulum and sending a dot into the line.

When the key-lever is moved toward the left—that is, thrown to contact-point 12—the current, as before, leaves the positive pole of the battery over wire 51, dividing through the vibrator-electromagnet and repeating-instrument electromagnet, uniting again at wire 52, and passing on through key-lever 10, contact-screw 12, and over wire 49 to the negative pole of the battery, thereby shunting or short-circuiting the contacts 24 between vibrator-armature 19 and the pendulum. This action energizes both the vibrator-electromagnet and the repeating-instrument electromagnet, the repeating-instrument armature being attracted, and consequently closing the main-line or foreign circuit at contacts 36, this circuit remaining closed so long as the key-lever is held to left-hand contact 12, leading to the shunt-circuit. As this action also energizes the vibrator-electromagnet, its armature 19 is attracted and carries the pendulum with it—i. e., kicks it out in precisely the same manner as when the key-lever was in contact with the opposite contact-point. When the key-lever is in contact with contact-point 12, however, the action of the vibrator is annulled by the shunt or short-circuit over wire 49. It will be readily understood, therefore, that the key-lever is thrown to the left—i. e., the shunt side—when it is desired to send a dash into the line.

When the repeating-instrument electromagnet is connected up in series with the vi-

brator-electromagnet and the armature and pendulum, as in Fig. 2, the action of the current is the same as in the other form; but instead of the current dividing and part passing through the vibrator-electromagnet and part through the repeating-instrument electromagnet and then reuniting the whole current passes from the positive pole of the battery over wire 51, through the vibrator-electromagnet, and through wire 52 to the key-lever. If the key-lever is held to contact-point 13, leading to wire 53, the whole current upon leaving the positive pole of the battery passes through the vibrator-electromagnet and armature and the pendulum and through the repeating-instrument electromagnet to the negative pole of the battery. This action energizes both the vibrator and the repeating-instrument electromagnets, and the operation is substantially the same as with the other form. When the key-lever is thrown toward the left—that is, to contact-point 12, with which a shunt or short-circuit wire 50 is connected—the circuit is closed upon both the vibrator and the repeating-instrument electromagnets and remains closed so long as the key-lever is held to that side, the only difference being that the entire current passes through both electromagnets, they being in series with each other instead of dividing and passing through the vibrator and repeating-instrument electromagnets in parallel, as in the other form. In the form illustrated in Fig. 2 the action of the vibrator is annulled by the shunt or short-circuit the same as in the form illustrated in Fig. 1.

In the form illustrated in Fig. 3 the repeating instrument, which is not an essential feature of the invention, is omitted. The action is the same as with the other forms, excepting, of course, the omission of the repeating instrument. The battery in this form may be at the distant end of the circuit, and the key and vibrator may be made to send impulses into the circuit in accordance with the principle of my invention without the use of a repeating instrument. The current, leaving the distant end of the circuit over wire 51, passes through the vibrator-electromagnet and through wire 52 to the key-lever, and if the key-lever was held to contact-point 13 the current would be through wire 53, vibrator-armature 19, and the pendulum back to the source of the current. The electromagnet would be energized, the armature attracted, and the pendulum carried thereby, i. e., kicked away from contact therewith, which would open the circuit, and the vibrator-armature would then return to contact with back-stop 25 through the action of retractile spring 27, and dots would be sent into the line the same as with the other forms. Should the key-lever be thrown toward the left—i. e., to contact-point 12—the vibrator would be short-circuited—that is, the current would flow steadily over wire 49 to the source of the current until the key-lever was released, and

dashes would be sent into the line. In sending on the duplex or quadraplex the vibrator may be inserted directly in the local circuit of the pole-changer or transmitter.

5 In the form illustrated in Fig. 4 the action is substantially as in the forms illustrated in Figs. 1 and 2 if a repeating instrument is placed in the circuit and substantially the same as in the form illustrated in Fig. 3 if a 10 repeating instrument is not used. The two Morse keys perform the same duty as the preferred form of key illustrated in the other forms—that is to say, one closes the vibrator-circuit, this circuit including the repeating 15 instrument if used, and sends dots into the line, and the other shunts or short-circuits the vibrator contact-points while closing the circuit and sends dashes into the line, instead of these functions being performed by movement of a single key in opposite directions. 20 Having thus described my invention, I claim—

1. In a telegraphic transmitter, the combination with a vibrator comprising an electromagnet, an armature therefor, a pivoted pendulum whose free end is adapted to engage the armature, and retractile springs for said armature and pendulum, of a key, electrical connections leading from the source of supply 30 through the electromagnet to the key and from one side of the key directly to the source of supply and from the other side of the key through the armature and pendulum to the source of supply, so that when the circuit is closed at one side of the key the current travels through the electromagnet and attracts the armature which in turn kicks the pendulum out of contact therewith and breaks the circuit, which action continues automatically sending dots into the line, and when the circuit is closed at the other side of the key the armature and pendulum are short-circuited and a dash is sent into the line.

2. In a telegraphic transmitter, the combination with a key comprising a lever and contact-points on opposite sides thereof, of a vibrator comprising an electromagnet, an armature therefor, a pivoted pendulum whose free end is adapted to engage the armature, and retractile springs for said armature and pendulum, and electrical connections leading 50 through the electromagnet to the key-lever and from one contact-point directly to the source of supply and from the other contact-point through the armature and pendulum to the source of supply, so that when the key-lever is thrown to one contact-point the current travels through the electromagnet and attracts the armature which in turn kicks the pendulum out of contact therewith and breaks the circuit, which action continues automatically 55

sending dots into the line, and if the key-lever is thrown to the other contact-point the armature and pendulum are short-circuited and a dash is sent into the line.

3. In a telegraphic transmitter, the combination with a vibrator comprising an electromagnet, an armature therefor, a pivoted pendulum whose free end is adapted to engage the armature, and retractile springs for said armature and pendulum, of a repeating instrument connected up in parallel with the vibrator, a key, and electrical connections leading from the source of supply through the vibrator and the repeating instrument to 75 the key, and from one side of the key directly to the source of supply and from the other side of the key through the armature and pendulum to the source of supply.

4. In a telegraphic transmitter, the combination of an electromagnet, an armature therefor, a pivoted pendulum having its free end adapted to engage the armature and to be kicked to one side thereby, a key, and electrical connections leading from the source of supply through the electromagnet to the key, and from one side of the key directly to the source of supply and from the other side of the key through the armature and pendulum to the source of supply, for the purpose set 90 forth.

5. In a telegraphic transmitter, the combination of an electromagnet, an armature therefor, a pivoted pendulum having its free end adapted to engage the armature and to be kicked to one side thereby, a key, retractile springs for said armature and pendulum and electrical connections leading from the source of supply through the electromagnet to the key, and from one side of the key directly to the source of supply and from the other side of the key through the armature and pendulum to the source of supply, for the purpose set forth.

6. In a telegraphic transmitter, the combination with a key comprising a lever and contact-points on opposite sides thereof, of an electromagnet, an armature therefor, a pivoted pendulum having its free end adapted to engage the armature and to be kicked to one side thereby, and electrical connections through the electromagnet to the key-lever and from one contact-point directly to the source of supply and from the other contact-point through the armature and pendulum to the source of supply, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HORACE G. MARTIN.

Witnesses:

ORYORD BREWER,
I. W. CONNALLY.

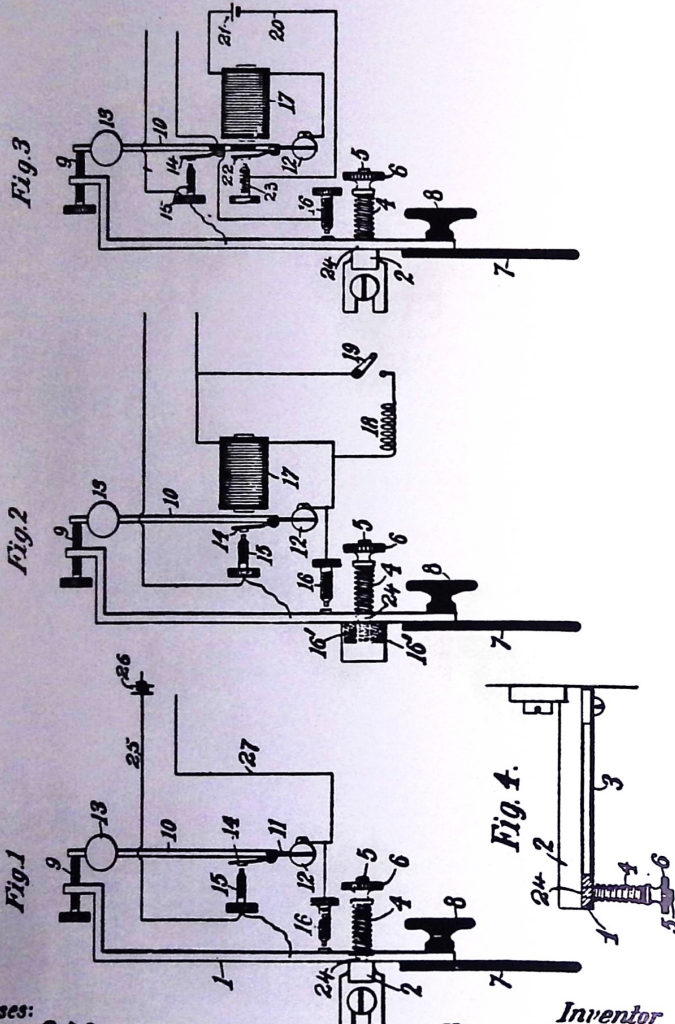
No. 767,303.

PATENTED AUG. 9, 1904.

H. G. MARTIN.
TELEGRAPHIC TRANSMITTER.

APPLICATION FILED MAY 7, 1904.

NO MODEL.



Witnesses:
Thomas J. Byrnes
Asst. Clerk

Inventor
Horace G. Martin,
by Ker. Van C. Cooper Att'y

No. 767,303.

Patented August 9, 1904.

UNITED STATES PATENT OFFICE.

HORACE G. MARTIN, OF BROOKLYN, NEW YORK.

TELEGRAPHIC TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 767,303, dated August 9, 1904.

Application filed May 7, 1904. Serial No. 206,706. (No model.)

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Telegraphic Transmitters, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

10 In a patent granted to me on June 30, 1903, No. 732,648, I have shown and described a novel form of telegraphic transmitter the essential features of which are a key, a vibrator, and suitable electrical connections by
15 means of which a movement of the key in one direction closes the circuit continuously to line, while a movement of the key in the opposite direction closes the line-circuit through the vibrator, which operates to send a suc-
20 cession of impulses continuing as long as the key remains in such position.

Briefly stated, the object of the invention is to enable operators to send Morse signals by means of a key, but by a very greatly-reduced
25 number of movements of the latter, and thus to provide a simple and effective method of sending that avoids the intense nervous strain involved in the operation of the ordinary Morse key in rapid work. Inasmuch as the
30 nature, object, and advantages of this system are dwelt upon at length in my patent referred to, it is unnecessary to repeat them herein, it being sufficient now to point out that the first of the above-described move-
35 ments of the key which effect prolonged closures of the line is used to send the dashes, while the movement in the opposite direction, which closes the line through a vibrator, sends the dots of the Morse code. The length of
40 the spaces and dashes and the number of the dots are thus under the direct control of the operator, while the length of the dots and their rapidity of succession is determined by the adjustment of the period of vibration of the vibrator. In the several forms of instru-
45 ments shown in my said patent in illustration of the principle of the invention the vibrator-magnet is in a circuit controlled by the key, is set in operation by the current
50 which is caused to flow in its circuit by a given

movement of said key, and thrown out of operation by the interruption of such current. I have found that this plan is in many respects the most reliable and effective; but I have also devised another way of carrying out the
55 invention in which a circuit-controller having a predetermined period of its own is directly controlled by the movement of the key—that is to say, is mechanically released or set in operation and restrained or pre-
60 vented from its normal operation of sending successive short impulses over the line by the disengagement and engagement therewith of the key itself. Such a device may be made
65 more cheaply and is more simple in construction; but for many purposes it is a very desirable instrument and secures the main advantages of my novel system. This form of transmitter, which I designate as "semi-auto-
70 matic," is exemplified in any combination of a key which by a movement in one direction sends an impulse to line proportional in length to the duration of the contact thus effected and an automatic circuit breaker or controller of the general nature of a vibrator or
75 "buzzer" which operates to make and break the circuit at a substantially uniform but comparatively rapid rate and which is normally restrained from operation by the key, but
80 released by the movement of the latter in a direction opposite to that utilized for sending dashes. Obviously many forms of vibrator, mechanical and electrical, may be utilized for this purpose; but in illustration of the gen-
85 eral principle I have shown in the accompanying drawings a device in the nature of a pendulum which by the engagement of the key is normally held at such a point in its path of swing that when released by the withdrawal
90 of the key it will be free to vibrate. This vibrator is utilized to make and break a circuit and send dots over the line, the number sent in succession being determined by the length of time the key is held out of engagement with the pendulum. In connection with
95 the pendulum I may use an electromagnet the circuit of which is controlled by the oscillations of the pendulum itself; but this is not essential in any case in which, as with a pendulum released at some point to either side of, 100

the center of oscillation, the device possesses in itself the capability of movement which may be utilized to periodically make and break a circuit.

5 Referring now to the drawings, Figure 1 is a plan view of the instrument, showing the circuit connections. Figs. 2 and 3 are similar views of modifications of the same, and Fig. 4 is a detail showing the key-lever in section.

10 As a convenient form of key I use a plate or bar 1, held against the flat surface of an arm or post 2 by means of a flat spring 3 and a spiral spring 4, which surrounds a stud 5. The key bar or lever 1 contains a slot through which the stud 5 passes, and the compression of the spring 4 is regulated by a screw-nut 6 on the end of the stud. By this means the key-lever is held in its central or normal position, but may be readily moved from side to side about the point 24 as a fulcrum. A hard-rubber plate 7 and a head 8 are secured to the key-lever and are of any form which makes it convenient for the operator to grasp them between the thumb and fingers. The key-lever 1 is bent at its free end at right angles and carries a set-screw 9. The end of this screw lies in the path of a vibrator which in this case consists of a rod or bar 10, supported by a flat spring-plate 11 on a stud 12. A weight or bob 13 is adjustably attached to the bar 10 to vary its period of vibration. In its normal position the key-lever holds the pendulum-bar to one side of its normal center of oscillation, with the spring 11 under light tension. If the key be shifted so as to suddenly withdraw the set-screw from engagement with the pendulum, the latter will at once start vibrating and will continue in motion for some time. This movement is taken advantage of to make and break either of the line or a local circuit by attaching to the bar a light contact-spring 14, which touches a contact-stop 15 when the bar swings over sufficiently to that side. The circuit connections to the bar 10, stop 15, and key-lever 1 are made in any suitable and well-known way, so that when the key is shifted by the operator to the right the vibrator will send dots over the line, but when the key is turned to the left it will come in contact with a stop 16 and send a prolonged impulse to line. A convenient arrangement of circuits for this purpose is shown in Fig. 1, in which 25 is a wire leading from a battery 26, and 27 is the line-wire.

55 The wire 25 is connected to the stop 15 and also to the key-lever, while the line-wire is connected to stop 16 and also to the pendulum-lever 10. By this means the battery-currents will be sent to the line from either the stop 15 or the key-lever 1, according as contact is made between stop 15 and spring 14 or between the key-lever and stop 16. The screw-stop 9, carried by the lever 1, is of insulating material or insulated from the lever in case

the pendulum-lever is of conducting material or the spring 14 not insulated from it.

In Fig. 2 substantially the elements are shown, and the operation is not materially affected by the modifications introduced. The key-lever in this figure is shown as seated on two spiral springs 16', inserted in recesses in the post 2 on opposite sides of the fulcrum of the key. These springs take the place of the flat-spring 3 of Fig. 1. I have shown in this figure also an electromagnet 17 in the circuit of the pendulum and stop 15. When the pendulum has been released by the key and closes the circuit between the spring 14 and stop 15, the magnet 17 is energized and exerts an attraction for the pendulum, which ceases the instant the circuit is broken by the separation of the contact-points. This imparts a more positive swing to the pendulum and maintains the amplitude of its vibrations. A short circuit around the magnet, maintaining a resistance 18 and switch 19, may be used to cut the magnet out when so desired.

The arrangement shown in Fig. 3 differs from that of Fig. 2 only in having a local circuit 20 for energizing the magnet 17. This circuit contains a local battery 21 and is made and broken by an additional spring 22 on the pendulum and a stop 23. This arrangement takes the magnet 17 out of the main or sending circuit.

From the above description of the construction and mode of operation of the form of transmitter to which my present application relates it will be obvious that the vibrator and the specific means for engaging and releasing the same by the key may both be varied in many details without departure from the invention.

What I claim is—

1. In a telegraphic transmitter, the combination with a circuit-controller capable of making and breaking a circuit at a uniform rate, of a key normally engaging said controller and preventing it from operating, and a contact for said key, the key being capable of two movements from its normal position, one of which withdraws it from engagement with the controller, while the other brings it into engagement with its contact, as set forth.

2. In a telegraphic transmitter, the combination with an automatic circuit-controller capable of making and breaking a circuit at a uniform rate, of a key normally engaging said controller and preventing it from operating, means for holding said key in its normal position of engagement with the controller, and a contact-stop for said key, the key being capable of movement in opposite directions from its normal position, by one of which it releases the controller and by the other of which it engages the contact-stop, as set forth.

3. In a telegraphic transmitter, the combi-

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8

5 nation with an automatic vibrating circuit-controller having a defined period of oscillation, of a key normally engaging the controller, and preventing it from vibrating, and a contact-stop for said key, the key being capable of movement in opposite directions from its normal position, by one of which it is withdrawn from engagement with the controller,

whereby the latter is permitted to intermittently make and break the circuit, and by the other of which it engages with the contact-stop, as and for the purposes set forth.

HORACE G. MARTIN.

Witnesses:

M. LAWSON DYER,
S. S. DUNHAM.

No. 812,183.

PATENTED FEB. 13, 1906.

W. O. COFFE.
TELEGRAPH KEY.

APPLICATION FILED JAN. 11, 1904.

2 SHEETS—SHEET 1.

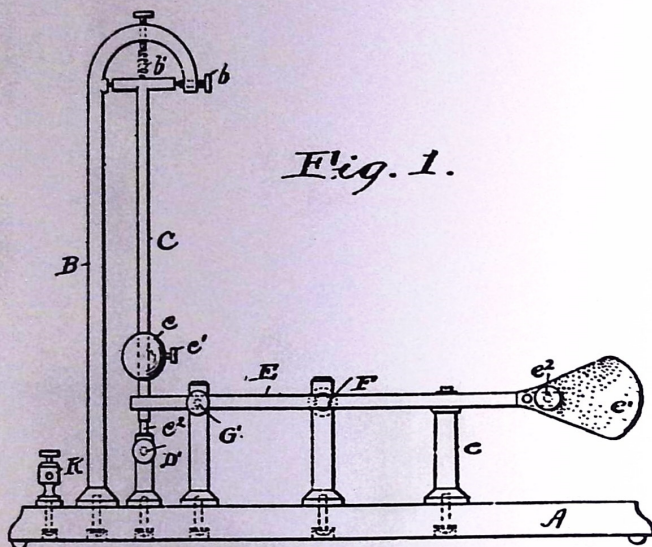


Fig. 1.

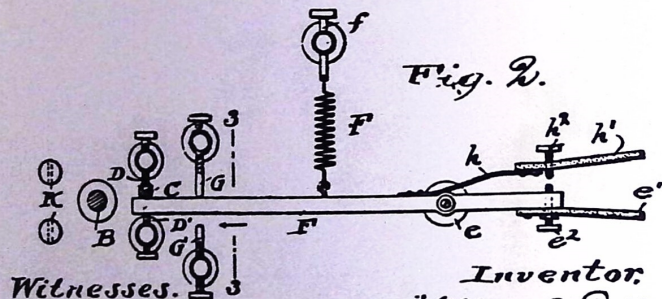


Fig. 2.

Witnesses.
E. B. Gleichert
B. W. Brockett.

Inventor,
William O. Coffe
By his Attorneys,
Shurston & Bates

No. 812,183

PATENTED FEB. 13, 1906.

W. O. COFFE.
TELEGRAPH KEY.

APPLICATION FILED JAN. 11, 1904.

2 SHEETS—SHEET 2.

Fig. 3.

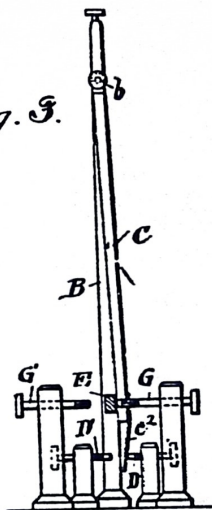
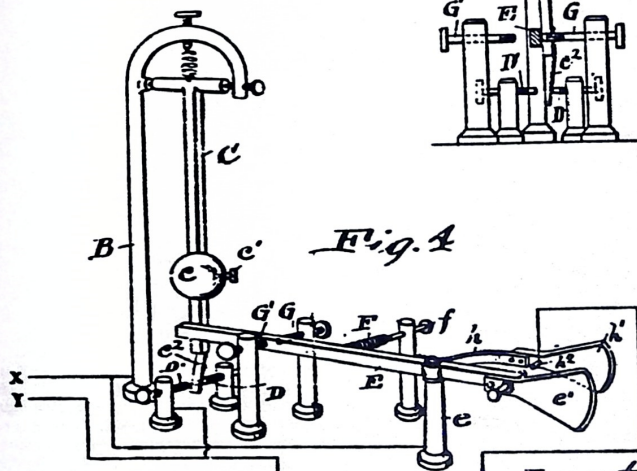


Fig. 4



Witnesses.
S. B. Fitchett
B. V. Brockett.

Inventor
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By his attorneys,
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UNITED STATES PATENT OFFICE.

WILLIAM O. COFFE, OF CLEVELAND, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO BENJAMIN F. BELLOW'S, OF CLEVELAND, OHIO.

TELEGRAPH-KEY.

No. 812,183.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed January 11, 1904. Serial No. 188,448.

To all whom it may concern:

Be it known that I, WILLIAM O. COFFE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Telegraph-Keys, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The ordinary Morse key requires a movement of the operator's hand for each dot or dash. This is extremely tiresome and wearing on the operator. To relieve the nervous strain, mechanism has heretofore been devised whereby the key is provided with two movements, one of which manually causes the dashes as usual, the other of which initiates mechanism which automatically makes the dots. Inasmuch as the dots very much preponderate in the Morse alphabet, the relief thus afforded to the operator has been demonstrated to be very great. The mechanisms heretofore used for effecting this result, however, have comprised electromagnets, batteries, switches, adjustable springs, and other features making a complex and expensive apparatus and one requiring continual adjustment as the battery runs down.

The object of this invention is to provide a mechanism to accomplish the same result while doing away with the electromagnets and batteries, the construction being at once simple, cheap, durable, and not liable to get out of order.

To this end the apparatus consists of a controller, said controller comprising a vibrator having a uniform rate of vibration and operated mechanically and adapted when released to make and break the circuit, and a key operating to release the vibrator to effect the dots, another movement being provided for the dashes.

The more particular embodiment of the invention herein shown and more fully herein after described is also comprised within the present invention.

In the drawings, Figure 1 is a side elevation of my improved key, and Fig. 2 is a plan thereof sectioned through the vibrator-arm and its standard. Fig. 3 is a vertical section through the key-lever, being on the line 3-3 of Fig. 2. Fig. 4 is a perspective view of the apparatus, showing the arrangement of circuits.

The same letters of reference designate the same parts in each figure.

Referring to the embodiment of parts shown in the drawings, A represents a suitable base, from which rises a standard B. Pivotaly carried by this standard is the depending vibrator-arm C. There may be an adjustable pivot-screw *b* for lightly supporting this arm and an electric conductor *b'*, connecting the arm with the standard. Slidably mounted on the arm C is shown a weight *c*, which may be clamped in adjusted position by a set-screw *c'*. At the lower end of the arm C is the leaf-spring *c'*, which projects between a pair of stop-screws D D', these screws being carried by suitable standards. In the vertical position of the vibrator or pendulum C the spring *c'* is preferably midway between the contact-points D and D'.

Fig. 4 indicates by X and Y a main line. One terminal X is connected with the standard B and the other terminal Y with the stop-screw D'. From this it results that if the spring *c'* is in contact with the stop D' the circuit is closed. If the spring is out of contact with this stop, the circuit is open.

E represents a key-lever pivotaly mounted on the standard *e*. This lever extends across and is adapted to bear against the pendulum C. It is drawn toward the pendulum by a spring F, suitably adjusted by a screw *f*. Suitable stop-screws G and G' are provided for limiting the movement of the key-lever. With the parts in normal position, as shown in the drawings, the spring F draws the key-lever to the right against the stop G, and this holds the pendulum with the leaf-spring *c'* bent against the stop-screw D. Now if the key-lever is moved away from the stop G into engagement with the stop G' the pendulum is released and swings away from the stop D and over against the stop D' under the influence of gravity, momentum, and the retractile force of the spring *c'*. This closes the circuit at D'; but the pendulum immediately returning breaks the contact, and thus causes a dot to be sent over the line. As it again swings against the stop D' another dot is sent, and so on. The length of the pendulum is such that the successive makes and breaks in the circuit which it causes shall send the succession of dots over the line at a high rate of speed. I have found a pendulum four or five inches long to be very satisfactory; but the

length varies with the stiffness of the spring c' and with the speed required. The sliding weight c allows variations of the effective length of the pendulum. The weight c , though desirable, is not absolutely essential, as the result could be accomplished by making the arm C heavier. The elasticity of the spring c' not only assists momentum, but insures the pendulum making effective contact on its successive swings. In the Morse alphabet six dots is the maximum required for any character. (six dots represent the figure "6," five dots, the letter "P," four dots, the letter "H," these being the characters using the most dots,) and the pendulum could easily make ten or twelve dots, and so it is certain to make any number required from one to six, according to the length of time the key-lever E is held away from the stop G. The arc through which the pendulum swings is so very short that its movement is substantially uniform and the dots are made with an accuracy exceeding the best hand practice. Adjustment of the stop-screws D and D' allows the sending to be light or heavy, as desired.

For the movement of the key-lever E, I secure to it, preferably in front of its support e , a suitable wing or finger-piece e' . By means of a leaf-spring h another finger-piece h' is carried by the key-lever. These finger-pieces may be of hard rubber. The finger-piece h' carries a suitable contact-point h^2 , which is connected with the same main-line terminal Y to which the stop D' is connected. This contact-point h^2 coöperates with the contact-point e' , carried by the key-lever and connected by means of the key-lever and the standard e with the other main-line terminal X, which leads also to the standard B, as heretofore stated. Thus the finger-pieces e' and h' , which I term the "finger" mechanism, form another means for closing the circuit. These pieces are caused to approach each other by pressure of the operator's first finger on the piece h' whenever it is desired to make a dash, and the contact-points h^2 and e' contacting close the circuit for as long a period as such pressure is maintained. When the pressure is released, the spring h separates the contacts. In making the dashes, therefore, the mechanism is acted on by a pressure toward the left of the operator's first finger on the piece h' . In making the dots the whole finger mechanism is swung to the right by pressure of the thumb on the piece e' , and this releases the pendulum until the proper number of dots have been made, when their continuance is cut off by the return of the key-lever.

One of the advantages of my apparatus is that it is all contained in a single instrument. The wiring from the standards B and e and the contact-points D' and h^2 terminates in a pair of binding-posts K K, and all that is nec-

essary to do is to connect two terminals of 65 the main line to these posts.

I claim—

1. In a telegraph-key, in combination, a gravity-vibrator adapted to swing by its own tendency and thereby make and break the circuit, a finger-key adapted to release the vibrator, and an adjacent finger-key adapted to open and close the circuit independently of the vibrator.

2. In a telegraph-transmitter, the combination of a stop and a spring coöperating therewith, each forming a terminal of an electric circuit, and a pendulum carrying one of said terminals, and means for holding said pendulum from swinging and allowing it to swing as desired.

3. In a telegraph-key, in combination, a stop, a spring coöperating therewith each forming a terminal of an electric circuit, and a pendulum carrying one of said terminals, and means for holding said pendulum from swinging and allowing it to swing as desired, a finger-piece for operating said means, and an adjacent finger-piece for closing the circuit independently of the pendulum.

4. The combination of an arm adapted to vibrate and make and break an electric contact, a key-lever engaging said arm to prevent its vibrating, a finger-piece on said key-lever for moving it to release said arm, and an adjacent finger-piece for making the contact independently of said arm.

5. The combination of a standard, a depending pendulum supported thereby, a spring carried by said pendulum and adapted to swing the same freely in both directions, an electric terminal coöperating therewith, and a key-lever adapted to control said pendulum.

6. The combination of a standard, a pendulum suspended therefrom, a spring carried by said pendulum at its lower end, a stop-screw forming an electric terminal which said spring is adapted to engage, and a key-lever adapted to bear against said pendulum and normally hold it with the spring out of contact with the stop-screw.

7. The combination of a standard, a pendulum suspended therefrom, a spring carried by said pendulum, a stop-screw forming an electric terminal which said spring is adapted to engage, a key-lever adapted to bear against said pendulum and normally hold it with the spring out of contact with the stop-screw, and a weight adjustably carried by said pendulum for varying its effective length.

8. The combination of a standard, a pendulum supported thereby and adapted to swing freely in both directions, an electric terminal coöperating therewith, and a key-lever adapted to control said pendulum, a finger-piece for operating said key-lever and an adjacent finger-piece for making dashes.

9. The combination of a pendulum, terminals cooperating therewith to make and break an electric circuit, a key-lever, and finger-pieces carried by said lever and adapted by one movement to swing the lever into engagement with said pendulum and by another movement to make and break an independent circuit.

10. The combination of a pendulum, terminals cooperating therewith to make and break an electric circuit and to transmit a rapid succession of short impulses through said circuit, and means for interrupting the movement of the pendulum, said means consisting of a key comprising a pivoted lever carrying a pair of finger-pieces, by one of which the key is given a movement to make and break another circuit.

11. In a telegraphic transmitter, in combination, a vibrator adapted to make and break an electrical circuit, a key-lever for controlling the operation of said vibrator, and an independent circuit-controller carried by said lever.

12. In a telegraphic transmitter, the combination of a vibrating controller including a spring, said spring constituting one terminal of an electric circuit, a cooperating terminal, finger mechanism adapted to be operated by the thumb and finger pressing in opposite directions, lever mechanism operable thereby and adapted to allow the controller to vibrate and bring said terminals into contact, and a pair of contacts additional to said controller, one of said contacts being operatively connected with the finger mechanism.

13. In a telegraphic transmitter, the combination of a contact and a spring cooperating therewith, each forming a terminal of an electric circuit, a vibrating circuit-controller having a uniform rate of oscillation and carrying one of said terminals, means for holding said controller from swinging and for allowing it to swing as desired, a pair of contacts additional to said controller, and finger means for operating such allowing means and for closing said last-mentioned contacts.

14. The combination with a controller adapted to vibrate and make and break an electric circuit, a lever adapted to engage said controller and prevent its vibrating, a finger-piece movable in one direction independently of said lever, a pair of contacts independent of said controller, one of said contacts being movable and rigidly connected with said finger-piece, whereby the movement of such finger-piece may close such contacts without moving said lever, and means for moving said lever in the opposite direction to release the controller.

15. The combination of a controller adapted to vibrate and make and break an electric circuit, a lever adapted to engage said controller and prevent its vibrating, a spring acting on said lever to normally hold it in

such position, a finger-piece connected with the lever and adapted to move it away from the vibrator, a pair of contacts additional to the vibrator, and means connected with one of said contacts and movable with said lever in the direction to release the vibrator and movable independently of said lever in the opposite direction.

16. In a telegraphic transmitter, the combination of a contact and a spring cooperating therewith, each forming a terminal of an electric circuit, a vibrating circuit-controller having a uniform rate of oscillation and carrying one of said terminals, a member adapted to initiate the vibration of said controller, a spring acting on said member to hold the controller in idle position, a pair of contacts additional to said controller, and finger mechanism adapted to be operated by the thumb and finger pressing in opposite directions and serving by one of such movements to close said additional contacts and by the other to move said member to render the controller active.

17. In a telegraphic transmitter, the combination of a contact and a spring cooperating therewith, each forming a terminal of an electric circuit, a circuit-controller capable of making and breaking a circuit at a uniform rate and carrying one of said terminals, a lever normally engaging said controller to hold said spring and contact out of engagement, and means cooperating with said lever for making and breaking the circuit independently of said controller, substantially as set forth.

18. In a telegraphic transmitter, the combination of a controller adapted to vibrate and make and break a circuit, finger mechanism adapted to be operated by the thumb and finger pressing in opposite directions, a pair of contacts additional to said controller adapted to be closed by one of said pressures, and mechanism between the finger mechanism and the controller positively engaging the controller and actuable by the opposite pressure to render said controller active.

19. In a telegraph instrument, the combination of a vibrator adapted to be held at one end and vibrate at the other and carrying a spring constituting one terminal of an electric circuit, a contact and a stop, a finger-piece and mechanism controlled thereby for normally holding said vibrator against the stop and with the contacts open but adapted to allow the vibrator to make a succession of contacts.

20. In a telegraphic transmitter, the combination of a vibrator, said vibrator carrying one terminal of an electric circuit and including a normally constrained spring, a cooperating terminal, a finger-piece, and lever mechanism operated thereby and adapted to hold the terminals out of contact with the spring constrained or to permit the vibrator

812,183

to operate and bring said terminals into contact.

21. In a telegraphic transmitter, the combination of a controller capable of vibrating and making and breaking a circuit and including a spring, a restraining-arm therefor, a spring acting on said arm to cause it to prevent the controller from vibrating, a pair of contacts independent of said controller, and finger mechanism having two movements, by one of which it closes the independent contacts, and by the other of which it moves the arm against the action of the spring to render the controller active.

22. In a telegraphic transmitter, the combination of a vibrator capable of making and breaking a circuit at a uniform rate, key-lever mechanism normally engaging said vibrator and preventing it from operating, means co-operating with said mechanism for making and breaking the circuit independently of said vibrator, said mechanism being capable of a movement to withdraw it from engagement with said vibrator, substantially as set forth.

23. In a telegraphic instrument, the combination of a vibratory controller including a spring supported at one end, a contact and a stop on opposite sides of the path of vibration of said controller, a finger-piece, and mechanism controlled thereby for normally holding said controller against the stop with the contacts open, but adapted to render it active to vibrate and make a succession of contacts.

24. In a telegraphic transmitter, the combination of a circuit-controller, finger mechanism adapted to be operated by the thumb and finger pressing in opposite directions, a pair of contacts additional to the controller adapted to be closed by one of said pressures, and mechanism between the finger mechanism and the controller positively engaging the controller and actuatable by the other of said pressures to render said controller active.

25. In a telegraphic transmitter, the combination of a circuit-controller capable of

making and breaking a circuit at a uniform rate, finger-key mechanism, a contact for said mechanism, mechanical means extending between said mechanism and said controller and normally preventing the operation of said controller, said mechanism being capable of two movements, by one of which it actuates said mechanical means to permit the operation of said controller, and by the other of which it engages its contact.

26. In a telegraphic transmitter, the combination of a circuit-controller, means for rendering said controller inactive, finger-key mechanism, a contact therefor, said mechanism being capable of two movements, by one of which it operates said means and renders the controller active, and by the other of which it is brought into operative relation with its contact.

27. In a telegraphic transmitter, the combination of a controller capable of making and breaking a circuit at a uniform rate, a pivoted arm normally preventing the operation of said controller, finger mechanism and a contact for said mechanism, said mechanism being capable of two movements, by one of which it moves the arm to permit the operation of the controller, and by the other of which it engages its contact.

28. In a telegraphic transmitter, the combination of a circuit-controller, a pivoted member, means acting on said member to hold said controller in inactive position, finger mechanism and a contact therefor, said mechanism being capable of two movements, by one of which it operates said member to render the controller active, and by the other of which it is brought into operative relation with its contact.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM O. COFFE.

Witnesses:

ALBERT H. BATES,
M. S. METZENBAUM.

No. 842,154.

PATENTED JAN. 22, 1907.

H. G. MARTIN.
TELEGRAPH TRANSMITTER.
APPLICATION FILED APR. 16, 1906.

Fig. 1

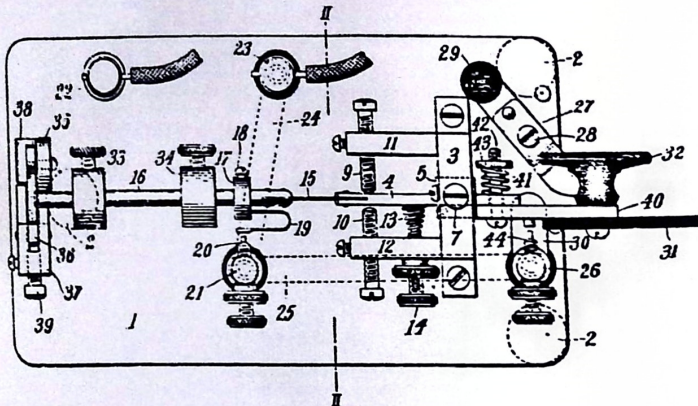


Fig. 2

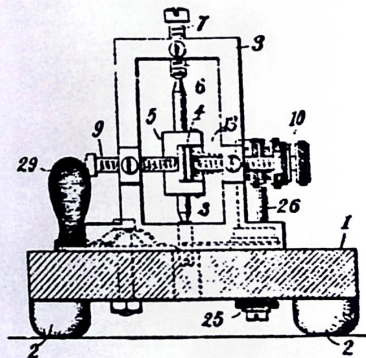
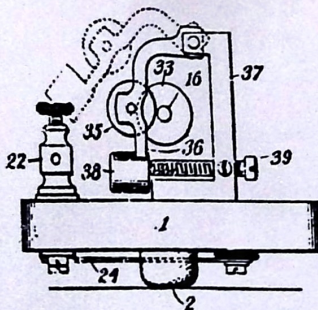


Fig. 3



Witnesses
Ralph H. Ketter
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H. G. Martin, Inventor

By his Attorney
Kerr, Page & Cooper

H. G. MARTIN.
ELECTRIC TELEGRAPHIC APPARATUS.
APPLICATION FILED JULY 1, 1911.

1,042,457.

Patented Oct. 29, 1912.

Fig. 1.

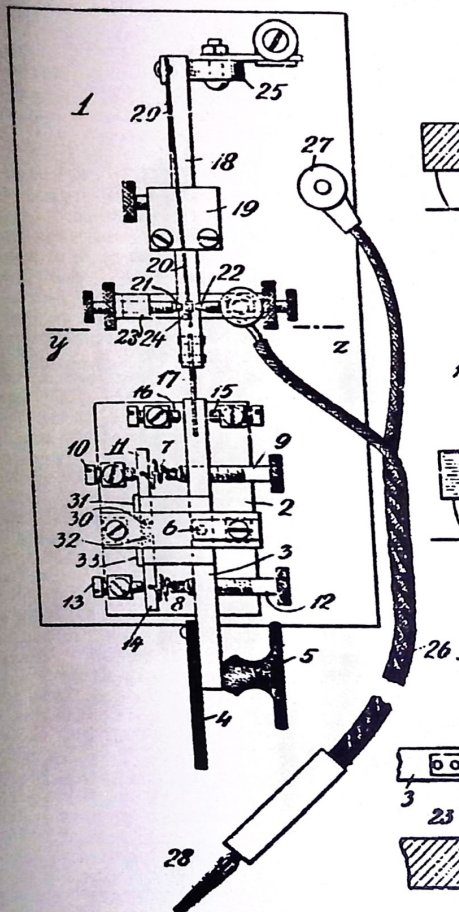


Fig. 2.

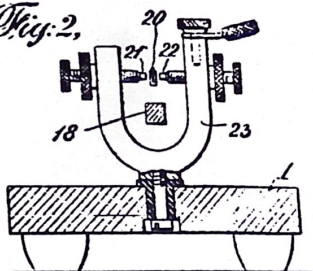


Fig. 3.

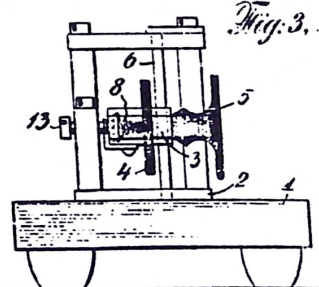
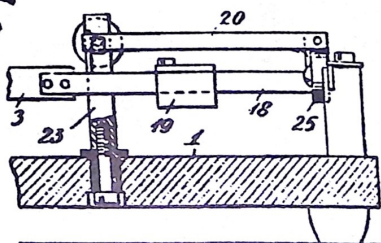


Fig. 4.



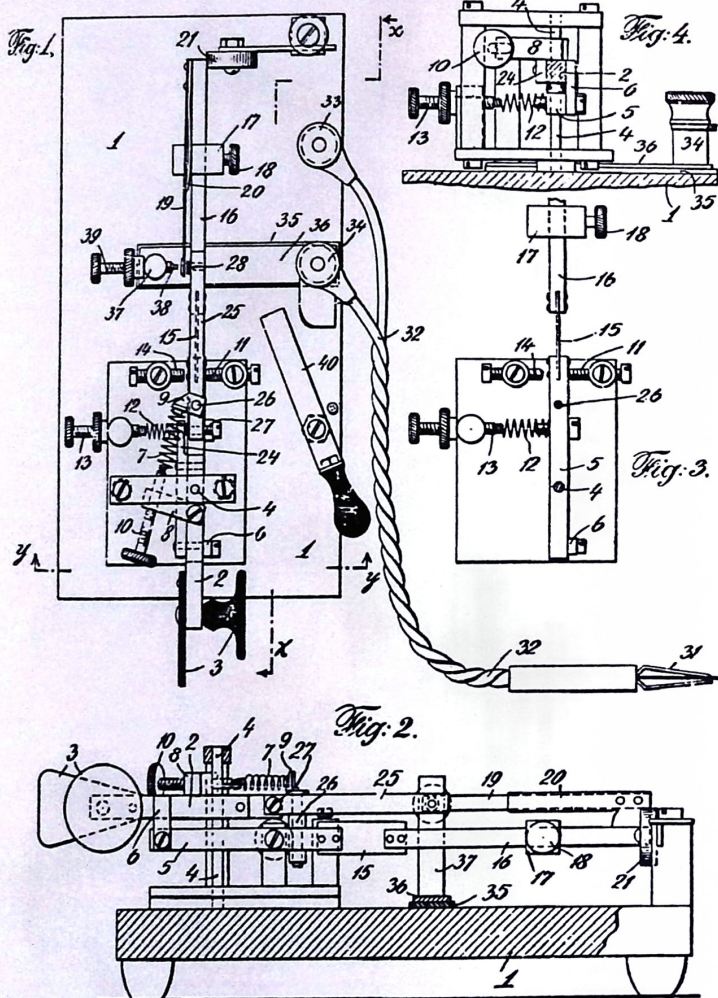
Witnesses:
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Philip Simmott.

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By his Attorney
Murray Cornington

H. G. MARTIN.
ELECTRIC TELEGRAPHIC APPARATUS.
APPLICATION FILED OCT. 27, 1911.

1,043,449.

Patented Nov. 5, 1912.



Witnesses:
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Horace G. Martin
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UNITED STATES PATENT OFFICE.

HORACE G. MARTIN, OF EAST RUTHERFORD, NEW JERSEY.

ELECTRIC TELEGRAPHIC APPARATUS.

1,043,449.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed October 27, 1911. Serial No. 657,194.

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at East Rutherford, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Electric Telegraphic Apparatus, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

My invention relates to improvements in electric telegraphic apparatus and its main purpose is to provide means whereby the operator may send messages with less manual labor than is required with the apparatus commonly used.

Referring to the accompanying drawings, Figure 1 is a plan of one embodiment of a complete apparatus embodying my invention; Fig. 2 is a side elevation partly in section on the line $x-x$ of Fig. 1, looking toward the left; Fig. 3 is a plan of a portion of the apparatus of Fig. 1 having certain parts removed so as to show other parts more clearly; and Fig. 4 is a sectional elevation on the line $y-y$ of Fig. 1, looking upward.

Considering the apparatus in greater detail, a suitable base 1 preferably of metal is provided, to which the working parts are attached. An operator's key-lever 2, having insulating hand pieces 3, moves from left to right on a vertical shaft 4, suitably mounted in upper and lower bearings (Figs. 1 and 2). Below lever 2 is a second lever or bar 5 which also swings from left to right upon shaft 4 and is held normally against an adjustable stop 11 by a spring 12 whose tension may be regulated by screw 13. An upright piece 6 attached to bar 5 is so arranged that when key-lever 2-3 is moved to the right bar 5 is moved in the same direction until its opposite end strikes adjustable stop 14 (Figs. 1 and 3). A shaft or pin 26 is secured to bar 5 and a small lever 25 is mounted thereon so as to swing from left to right and its movements are controlled by key 2, having for convenience an attachment 24, which, however, may be integral therewith, fastened to its side, so that one end thereof has a bearing against said lever 25 that may be made adjustable by means of screw 27 inserted in said lever. A spring 7 having bearings 8 and 9 secured to levers 2 and 25, respectively, and

having its tension regulated by screw 10, holds said levers normally in the positions shown in the drawings. An insulating button 28 may be inserted in the upper end (Fig. 1) of lever 25.

A flat, vertical spring 15 is secured to lever 5 and has attached to its opposite end a vibrating rod or bar 16, carrying a weight 17 which may be slid back and forth thereon and held at any desired point by a screw 18 (Figs. 1, 2 and 3). A suitable contact device 19 is secured to and operates with said bar 16, which in the form shown is preferably a flat spring held under a certain tension by the device 20. A stop or deadener consisting of a metal wheel or disk 21 hung loosely upon its axis is arranged to quickly stop the vibrations of bar 16 and parts connected therewith.

A suitable plug 31 for placing the apparatus in circuit is connected by suitable wires 32 with posts 33 and 34, the former being connected electrically with base 1 and the latter being secured to said base but insulated therefrom. Post 34 is connected by metal strip 36 with a post 37 which carries a contact 38 capable of regulation by screw 39. Parts 34, 36, 37, 38 and 39 are insulated from base 1 by insulation 35 (Figs. 1 and 2). A switch 40 electrically connected to base 1 normally stands in the position shown in Fig. 1, but when the handle is moved to the left, the current passes directly through the plug 31, wires 32, post 33, base 1, switch 40 and post 34, and the apparatus is in circuit but inoperative.

The operation of the apparatus will now be readily understood.

When the operator desires to send a message he moves key lever 2-3 to the right quickly till the opposite end of bar 5 strikes the stop 14 (Fig. 3). This sets bar 16 and parts connected therewith vibrating horizontally upon spring 15, and causes parts 19 and 38 to make and break a series of electric contacts and send a series of impulses over the line to the receiving station, the current flowing through one of the wires 32, post 33, base 1, shaft 4, lever 5, spring 15, bar 16, contacts 19 and 38, post 37, and thence by 36 and 34 to the other wire. These impulses produce the "dots" of a telegraphic message. When a single dot is desired, key 2 is moved to the right and returned at once either by the operator or by

spring 12. By holding said lever in its right hand position a longer or shorter time, a greater or smaller number of dots, as desired, will be made by the vibrations of bar 5 16 and contacts 19 and 38. When the operator desires to send an impulse over the line corresponding to a "dash" of a telegraphic message, he moves key 2—3 to the left, which causes the attachment 24 to swing small 10 lever 25 upon shaft 26 so that its opposite end or button 28 brings contacts 19 and 38 together closing the same circuit as pointed out above. A repetition of this movement causes any desired number of dashes. When 15 key 2—3 is moved to the right, parts 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 24, 25, 26, 27 and 28 are also moved, and spring 12 is compressed and returns the parts to normal position when pressure on said key is removed. When said key is moved to the left, 20 parts 8, 9, 10, 24, 25, 27, 28 and 19 are moved, and spring 7 is compressed and re-

turns the parts to normal position as soon as pressure on the key is removed.

I claim:

In an electric telegraphic apparatus, the combination of an operator's key movable in two directions, a lever actuated by movement of said key in one direction but remaining stationary during its other movement, a vibrator actuated by movement of said lever, a stationary electric contact and a movable electric contact carried by said vibrator and adapted to produce the dots of a telegraphic message when the operator's key is moved in one direction, and means for forcing the movable against the stationary contact to produce the dashes of a telegraphic message when said key is operated in the other direction.

HORACE G. MARTIN.

Witnesses:

MURRAY CORRINGTON,
CHARLES EISENHUT.

R. L. BOULTER.
TELEGRAPH KEY.

APPLICATION FILED AUG. 12, 1912.

Patented Oct. 7, 1913.

2 SHEETS-SHEET 1.

1,074,831.

Fig. 1.

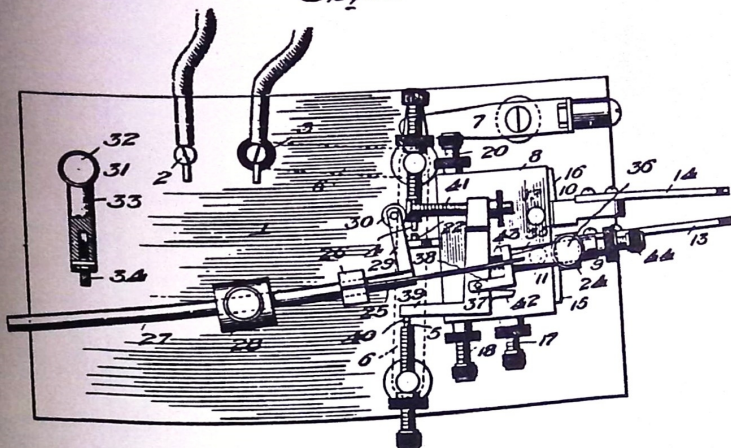
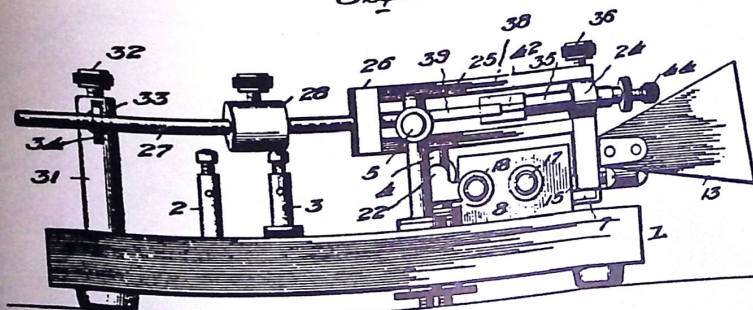


Fig. 2.



WITNESSES

[Signature]
J. V. Lockwood

INVENTOR

Royal L. Boulter
by *[Signature]* Attorney

R. L. BOULTER.
TELEGRAPH KEY.

APPLICATION FILED AUG. 19, 1912.

1,074,831.

Patented Oct. 7, 1913.

2 SHEETS—SHEET 1.

Fig. 3.

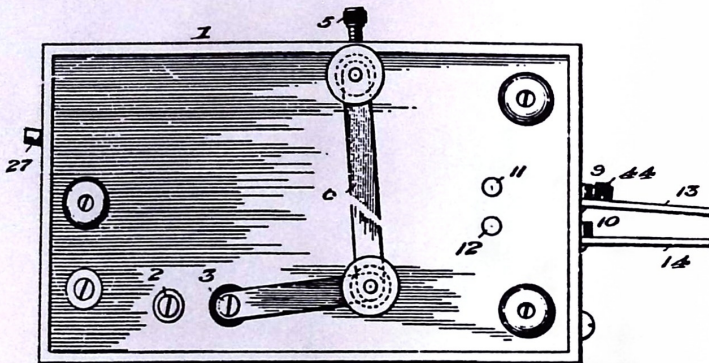


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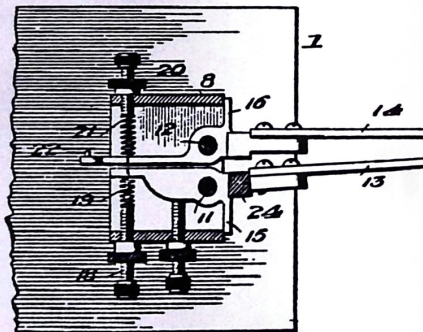
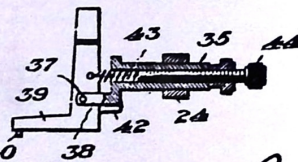


Fig. 5.



WITNESSES

[Signature]
D. V. Lockwood

INVENTOR

Royal L. Boulter
by *[Signature]* Attorney

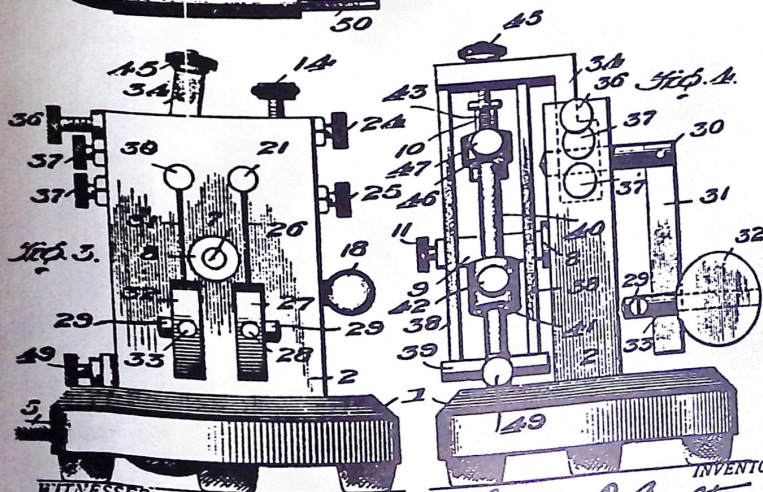
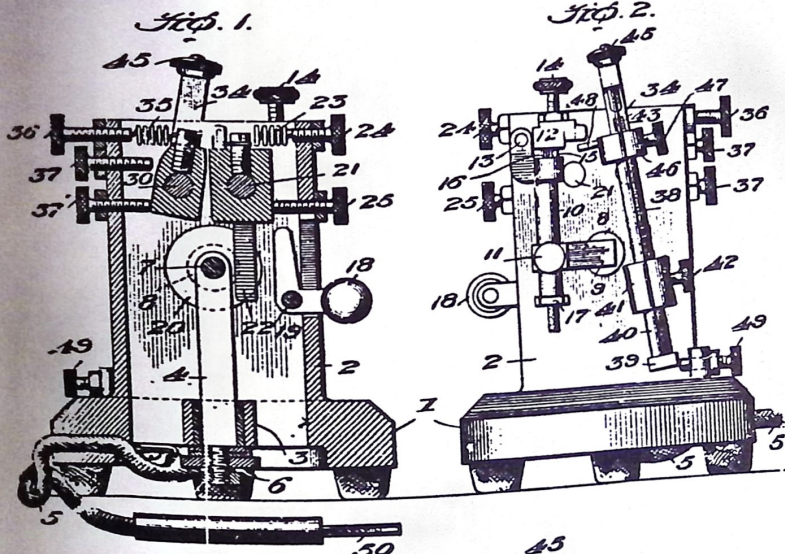
R. L. BOULTER.
TELEGRAPH KEY.

APPLICATION FILED MAR. 29, 1912.

Patented Sept. 8, 1914.

2 SHEETS-SHEET 1.

1,109,816.



WITNESSES

[Signature]
[Signature]

INVENTOR

Royal L. Boulter
[Signature] Attorney

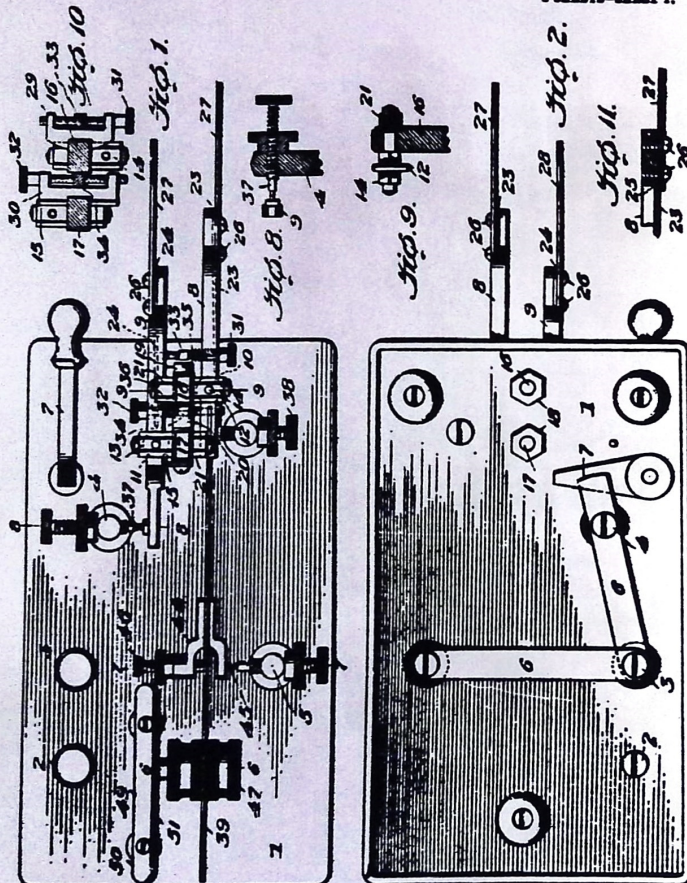
R. L. BOULTER.
TELEGRAPH KEY.

APPLICATION FILED SEPT. 2, 1913.

Patented Sept. 15, 1914.

2. SUBJECTS—UNDER 1.

1,110,373.



2014

J. V. Lockwood

Inventory

Royal L. Boultin

24 *L. H. Stawell*
his Attorney

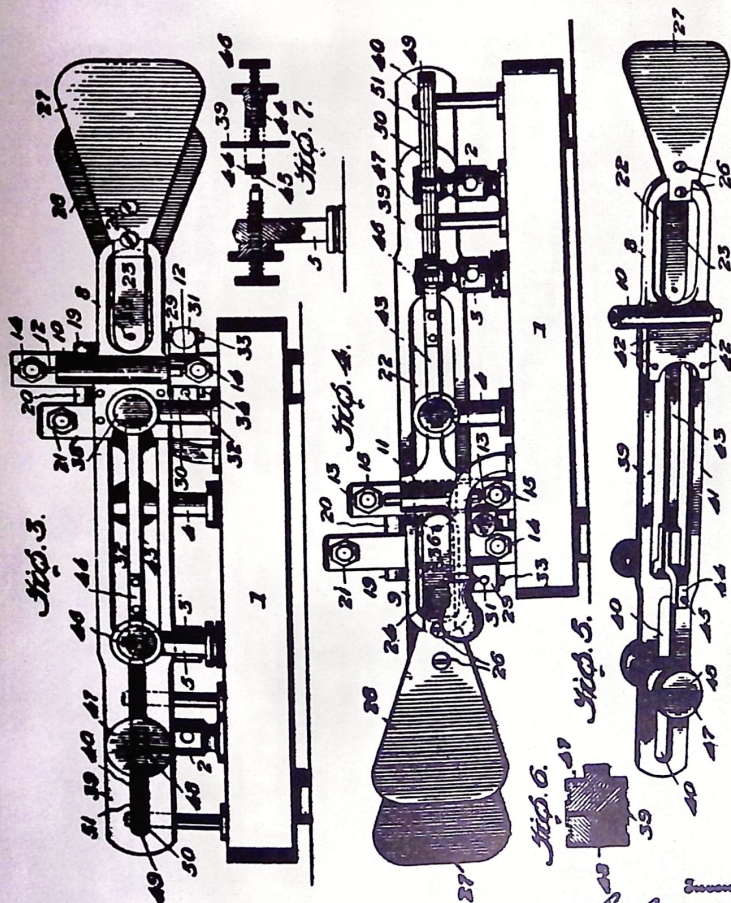
R. L. BOULTER.
TELEGRAPH KEY.

APPLICATION FILED SEPT. 2, 1913

Patented Sept. 15, 1914.

2 SHEETS-SHEET 1.

1,110,373.



Witness
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Inventor
Royal L. Boulter
J. B. Lockwood

R. L. BOULTER.
TELEGRAPH KEY.
APPLICATION FILED MAR. 29, 1912.

Patented Sept. 8, 1914.

2 SHEETS-SHEET 2.

1,109,818.

Fig. 5.

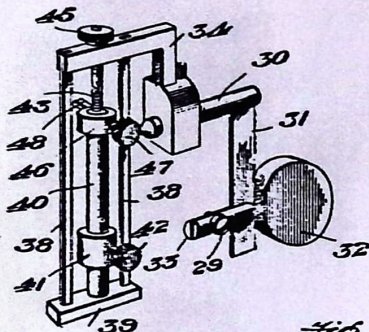


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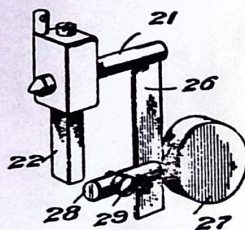


Fig. 7.

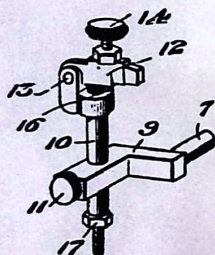


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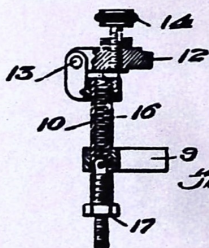


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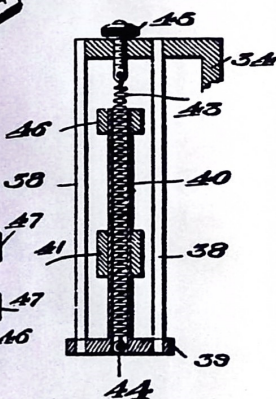
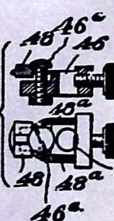


Fig. 10.



WITNESSES

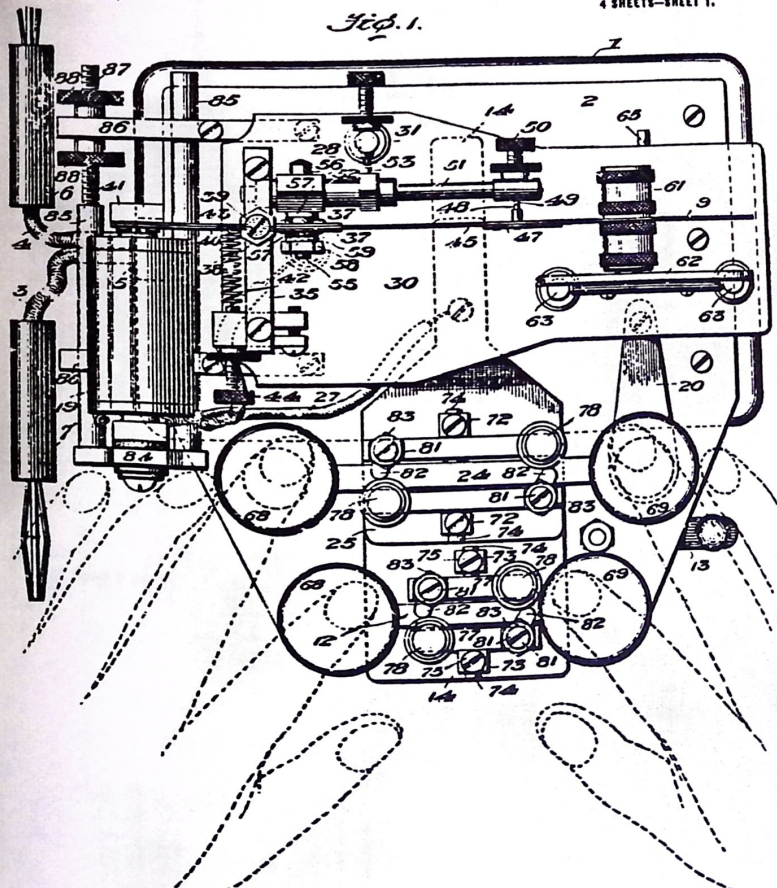
[Signature]
J. W. Lockwood

INVENTOR
Royal L. Boulter
[Signature]
Attorney

R. L. BOULTER.
ELECTROMAGNETIC TELEGRAPH KEY.
APPLICATION FILED NOV. 13, 1914.

1,170,796.

Patented Feb. 8, 1916.
4 SHEETS—SHEET 1.



Witnesses
[Signature]
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Inventor
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By *[Signature]*
Attorney

R. L. BOULTER.
ELECTROMAGNETIC TELEGRAPH KEY.
APPLICATION FILED NOV. 13, 1914.

1,170,796.

Patented Feb. 8, 1916.

4 SHEETS—SHEET 2.

Fig. 2.

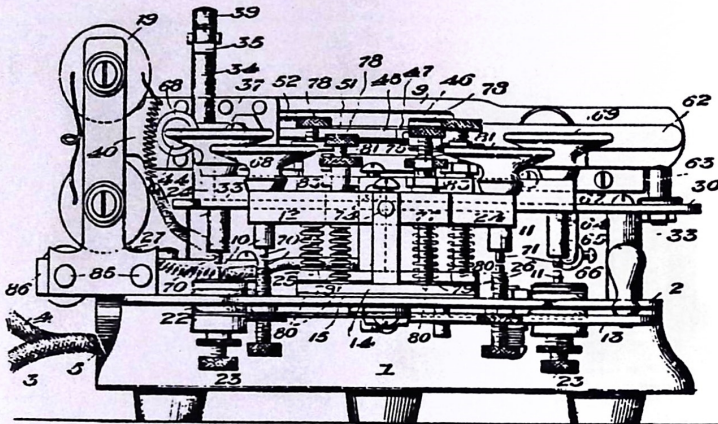
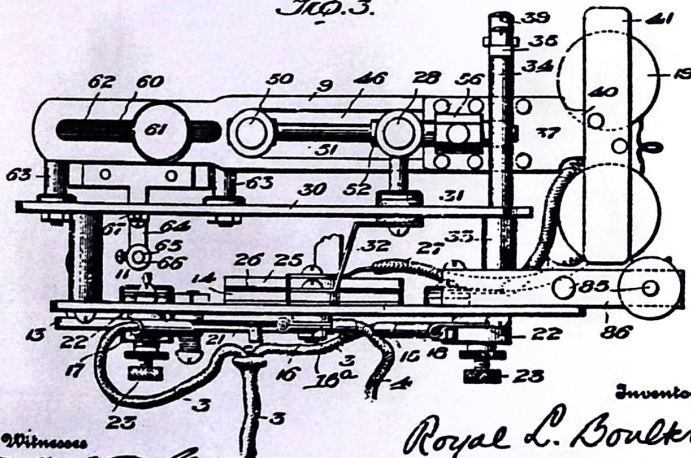


Fig. 3.



Inventor

Royal L. Boulter

By

Edw. A. Starnes

Attorney

Witnesses
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 J. H. [unclear]

R. L. BOULTER.
ELECTROMAGNETIC TELEGRAPH KEY.
APPLICATION FILED NOV. 13, 1914.

1,170,796.

Patented Feb. 8, 1916.
4 SHEETS—SHEET 3.

Fig. 4.

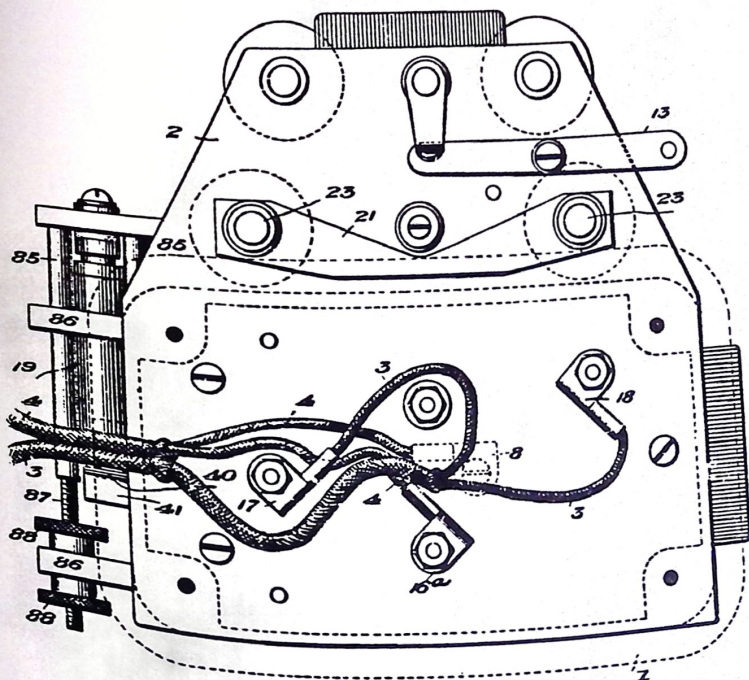
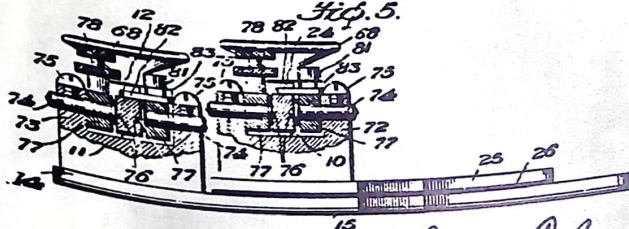


Fig. 5.



Witnesses
G. T. Lechwood

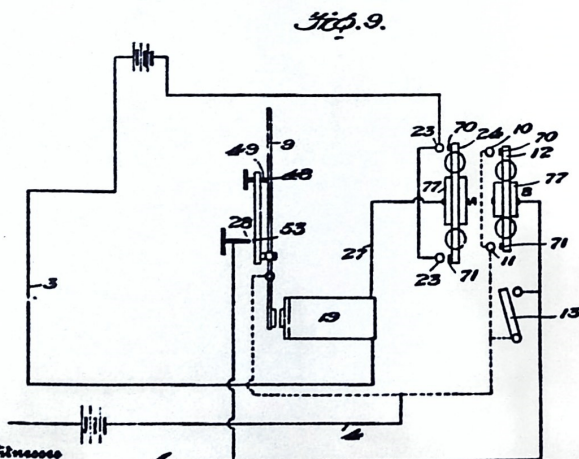
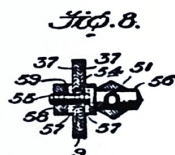
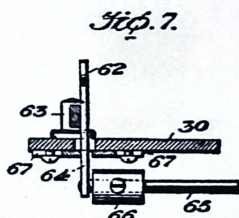
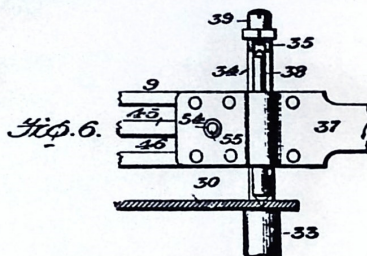
Inventor
Royal L. Boulter
J. J. Hamilton
Attorney

R. L. BOULTER.
ELECTROMAGNETIC TELEGRAPH KEY.
APPLICATION FILED NOV. 13, 1914.

1,170,796.

Patented Feb. 8, 1916.

4 SHEETS—SHEET 4.



Inventor

Witness
G. V. Lockwood

Royal L. Boulter
Attorney

R. L. BOULTER.
TELEGRAPH KEY.

APPLICATION FILED AUG. 1, 1914.

Patented Apr. 4, 1916.
3 SHEETS—SHEET 1.

1,178,291.

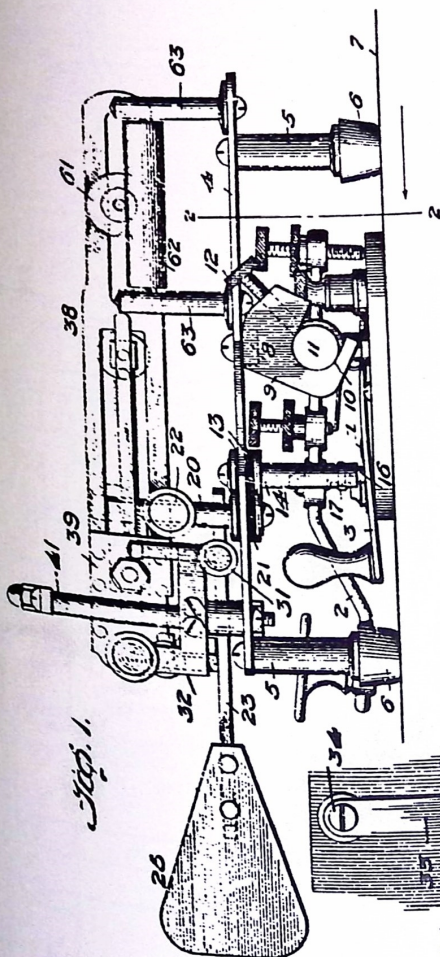


Fig. 1.

Fig. 3.

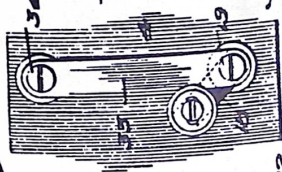
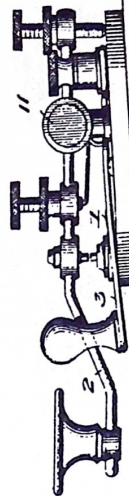


Fig. 14.

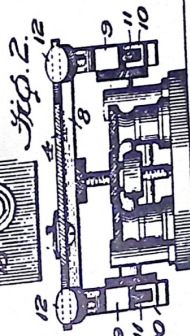


Fig. 2.

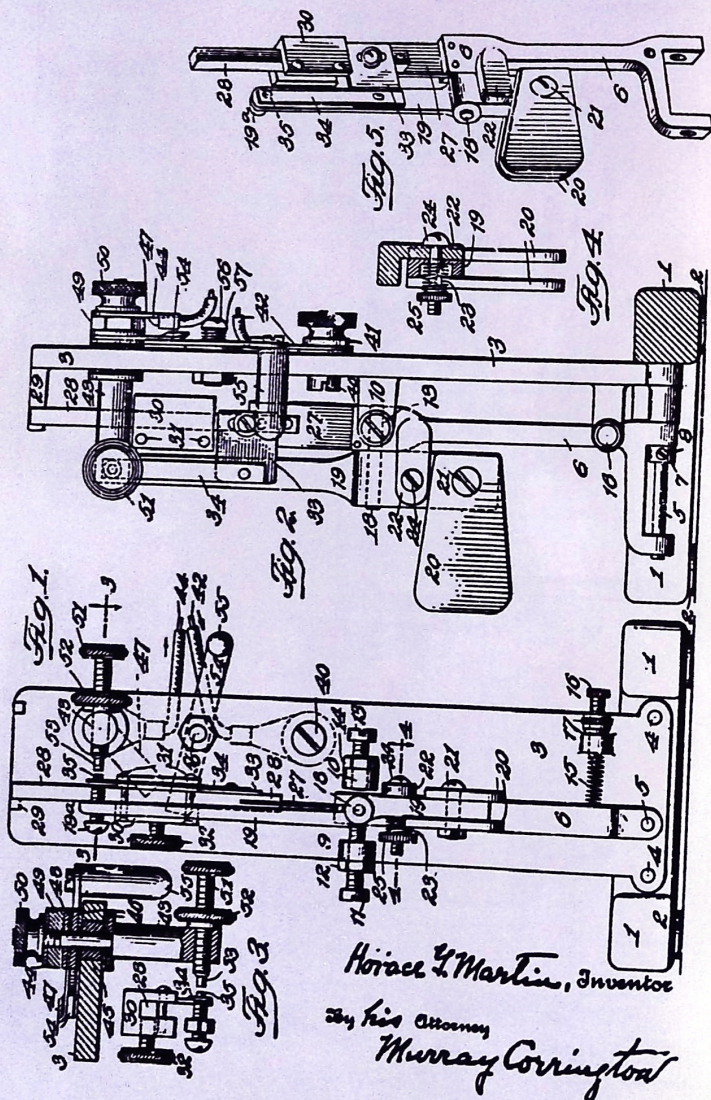
Witnessed
G. B. Dickerson

Inventor
Royal L. Boulter
By
G. B. Dickerson
Attorney

H. G. MARTIN.
TELEGRAPHIC SENDING MACHINE.
APPLICATION FILED AUG. 4, 1917.

1,260,008.

Patented Mar. 19, 1918.



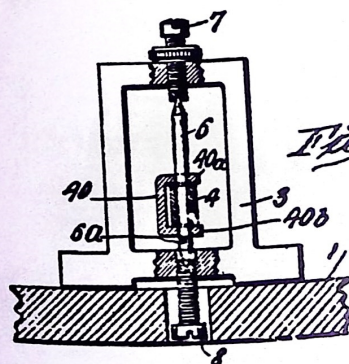
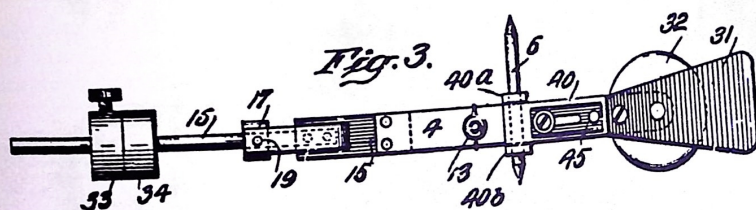
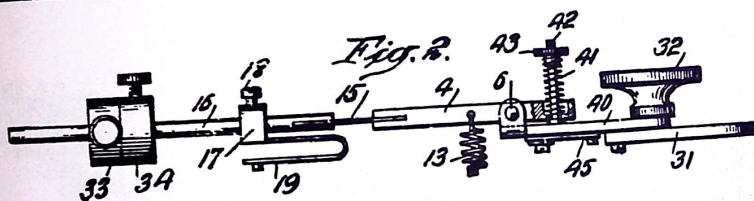
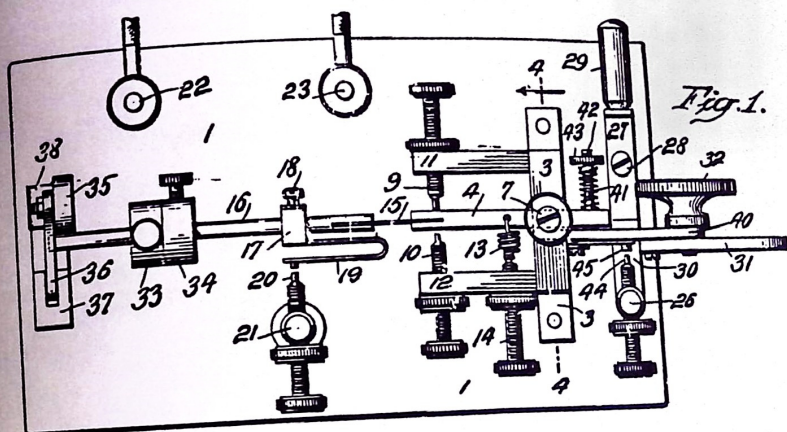
Feb. 13, 1923.

H. G. MARTIN

1,445,226

SEMI-AUTOMATIC TELEGRAPHIC SENDING MACHINE

Filed Dec. 10, 1921



HORACE S. MARTIN, INVENTOR.
 BY MURRAY CORRINGTON, ATTORNEY.

Jan. 16, 1940.

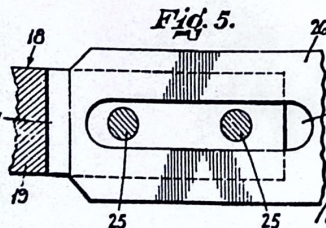
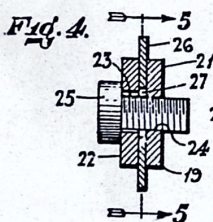
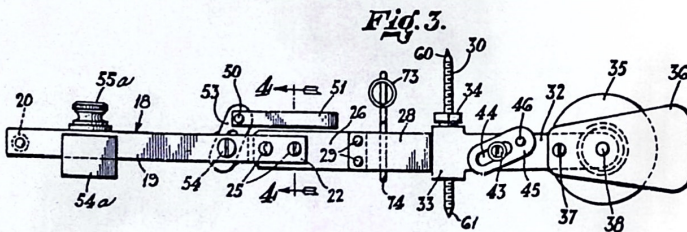
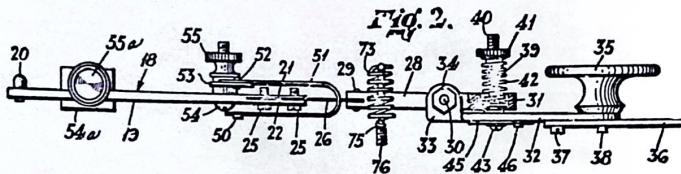
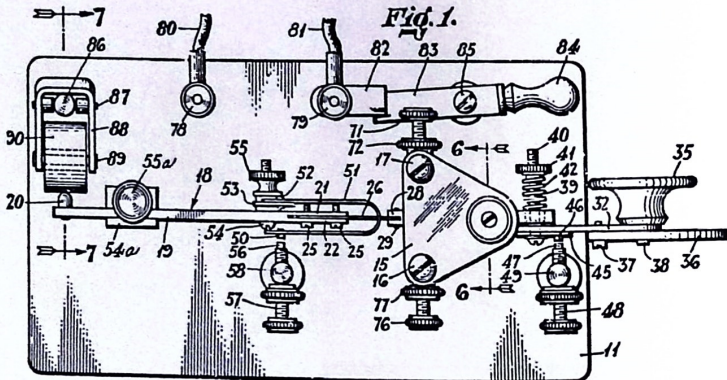
J. A. LA HIFF

2,187,351

TELEGRAPH SENDING MACHINE

Filed Jan. 9, 1939

2 Sheets-Sheet 1



INVENTOR
JOHN A. LA HIFF
BY *Richard & Seiler*
ATTORNEYS

Jan. 16, 1940.

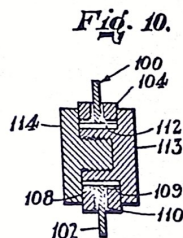
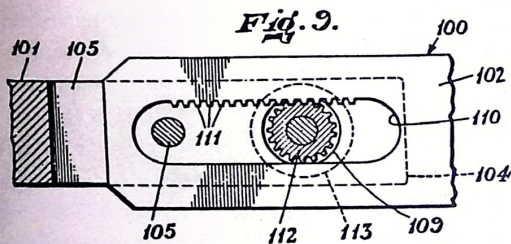
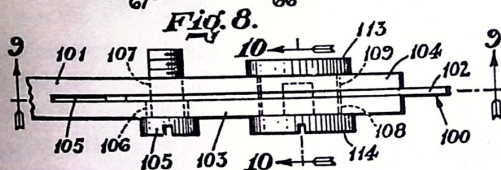
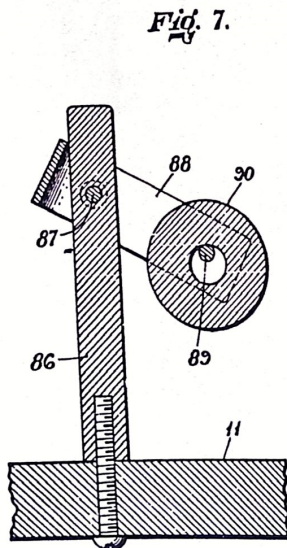
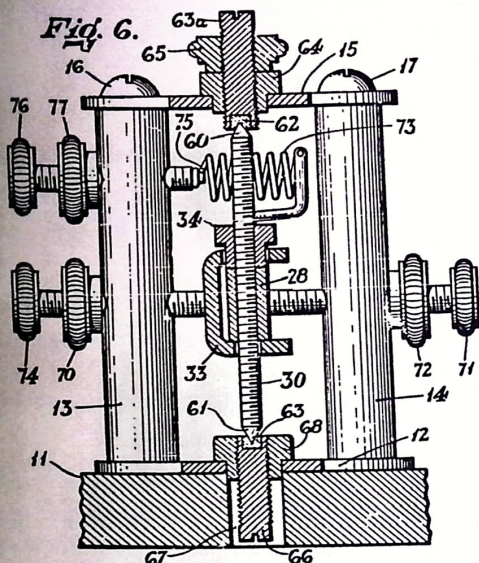
J. A. LA HIFF

2,187,351

TELEGRAPH SENDING MACHINE

Filed Jan. 9, 1939

2 Sheets-Sheet 2



BY

INVENTOR
JOHN A. LA HIFFRichards & Leier
ATTORNEYS

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PERIODICALS

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ARRL Handbook: 1939, 1940, 1941, 1948, 1949

Commercial Telegraphers' Journal

Journal of the Telegraph

Postal Telegraph

QST

Radio Industry

The Railroad Telegrapher

Telegraph and Telephone Age

ON THE MAKING OF THIS BOOK

This book was produced with materials and craftsmanship of the highest order, as a reflection of the care that continues to go into the construction of every Vibroplex key.

The manuscript was written on an Apple II and later transferred to a Macintosh IIcx for design. Bruce Kennett designed the book and produced the typesetting, using QuarkXPress software. Final page repros were produced at Imageset Design.

The book was set in Syntax-Antiqua, a typeface designed by the Swiss graphic designer and professor Hans Meyer. First released in 1970, Syntax blends the streamlined and simple strokes of a typical sans serif type like Helvetica with the dynamic shapes and rhythms found in the Renaissance types used by Aldus and Garamond. These qualities make for a typeface that is modern, yet refreshingly easy to read. In good book-making just as in good telegraphy, the message must be conveyed with clarity and style!

Toward the end of the project, those of us working on the book were delighted to discover that the typeface used for the Vibroplex logo in Figures 53 and 55 is a near-perfect match for Syntax! As Peter Garsoe remarked, "The new is forever old, and the old is forever new."

Western Maine Graphics printed the book in offset lithography on matte-coated, 80-pound Potlatch Vintage Velvet, an acid-free sheet that will not yellow or become brittle with age. One hundred deluxe copies were casebound in Holliston Roxite; the remaining 1900 copies were softbound in 12-point coated cover. New Hampshire Bindery bound the book using Smyth-sewn construction, which is still the best way to ensure long reference life and easy page opening.

The foil-stamped artwork on the front cover is an exact photographic copy, although reduced in size, of the hand-painted company sign that used to hang at the 833 Broadway office.

Bruce Kennett

September 1990



ABOUT THE AUTHOR

Bill Holly retired from the U.S. Coast Guard as a chief radioman with 22 years of service. He is currently a master electrician for a 210-bed hospital. He holds the Extra Class amateur radio license K1BH and has been collecting and studying the history of radio and telegraph instruments for 20 years. Bill is a life member of the American Radio Relay League (ARRL) and a member of the Antique Wireless Association, the Antique Radio Club of America, and the New England Antique Radio Club. He and his wife Fran have two grown daughters and live in Kittery Point, Maine, with their three cats.

